

FIRST : ALGEBRA

Choose the correct answer:

1) If the line segment passes through the points $(2, k)$, $(4, 7)$ parallel to X axis then $k = \dots\dots\dots$

- a) 5 b) 4 c) 7 d) 1

2) If the mean of 3 marks is 10, then the sum of their marks is

- a) 13 b) 20 c) 30 d) 6

3) If $(a, 2a)$ satisfies the relation: $y = x - 1$, then $a = \dots\dots\dots$

- a) 1 b) -1 c) 10 d) 3

4) The slope of the straight line parallel to x-axis is

- a) zero b) 1 c) undefined d) negative

5) $[1, 5] - \{1, 5\} = \dots\dots\dots$

- a) $]1, 5]$ b) $\{1, 5\}$ c) $]1, 5[$ d) $[1, 5[$

6) The median of: 24, 20, 11, 36, 40 is

- a) 24 b) 20 c) 40 d) 36

7) The cube whose volume is 27 cm^3 , then the area of one face =

- a) 36 b) 9 c) 12 d) 25

8) $(\sqrt{5} - 2) + (\sqrt{5} + 2) =$

- a) $2\sqrt{5}$ b) 3 c) $\sqrt{10}$ d) $3\sqrt{5}$

9) The conjugate of the number $\sqrt{5} - \sqrt{2}$ is

- a) $\sqrt{5} + \sqrt{2}$ b) $\sqrt{2} - \sqrt{5}$ c) $\sqrt{5} - \sqrt{2}$ d) $\sqrt{2} + \sqrt{5}$

10) $\sqrt[3]{4 + \dots} = 3$

- a) 27 b) 9 c) 23 d) 16

11) The square whose side length is $\sqrt{5}$ cm, its area =cm².

- a) 20 b) 25 c) $2\sqrt{5}$ d) 5

12) $R - Q = \dots\dots\dots$

- a) \emptyset b) Q^c c) Z d) N

13) $[-2, 7] \cap]-2, 7[= \dots\dots\dots$

- a) $] -2, 7 [$ b) $[-2, 7]$ c) $\{-2, 7\}$ d) $] -2, 7]$

14) The additive inverse of the number $5 - \sqrt{3}$ is.....

- a) $5 + \sqrt{3}$ b) $\sqrt{3} + 5$ c) $\sqrt{3} - 5$ d) $2\sqrt{3}$

15) $[-4, 6[- R_+ = \dots\dots\dots$

- a) $] -4, 0[$ b) $] -4, 0]$ c) $[-4, 6]$ d) $[0, 6]$

16) The sum of the real numbers in the interval $[-3, 3[= \dots\dots\dots$

- a) 6 b) 0 c) 3 d) 9

17) The solution set of the equation $x^2 + 25 = 0$ in R is.....

- a) $\{5, -5\}$ b) $\{0\}$ c) \emptyset d) $\{5\}$

18) The solution set of the equation $(x + 3)(x - 1) = 0$ in R is

- a) $\{3, 1\}$ b) $\{-3, 1\}$ c) $\{3, -1\}$ d) $\{-3, -1\}$

19) A right circular cylinder, its volume is 500π cm³ and the diameter length of its base is 10 cm, then its height is.....

- a) 20 b) 25 c) 10 d) 5

20) If $1 - x > 5$, then x

- a) ≥ 5 b) $= 5$ c) > -4 d) < -4

21) A right circular cylinder, its volume is 90π cm³, and its height is 10 cm then the radius length of its base =cm

- a) 9 b) 27 c) 3 d) 10

22) The cube whose edge length is 2 cm its volume is..... cm³

- a) 8 b) 6 c) 4 d) 20

23) The relation $3x + 4y = 12$ is represented by a straight line intersecting the x -axis at the point.....

- a) (4, 0) b) (0, 4) c) (3, 4) d) (-3, 4)

24) If the slope of the straight line passing through the two points $(3, y)$, $(5, -2)$ is -3 , then $y = \dots\dots\dots$

- a) 5 b) -4 c) 4 d) 2

25) If $(-1, 5)$ satisfies the relation : $3x + ky = 7$, then $k = \dots\dots\dots$

- a) 3 b) 5 c) -2 d) 2

26) The slope of the straight line that is parallel to the y-axis is.....

- a) ZERO b) Undefined c) Negative d) Positive

27) If the straight line: $ax + by + c = 0$ passes through the origin point, then $c = \dots\dots\dots$

- a) 1 b) a c) b d) 0

28) If $(2, -1)$ satisfies the relation $2x + 3y + c = 0$, then $c = \dots\dots\dots$

- a) -1 b) 2 c) 1 d) $\frac{1}{2}$

29) The point of intersection of the ascending and the descending accumulative frequency curves determines.....on the vertical axis.

- a) median b) order of the median c) mean d) mode

30) The most common values of a set of values is called

- a) Median b) mode c) mean d) otherwise

31) If the order of the median of a set of values is the ninth, then the number of these values is.....

- a) 20 b) 16 c) 9 d) 17

32) If the mode of the values : 9, 8, 9, y, 8 is 8, then $\sqrt[3]{y} = \dots\dots\dots$

- a) -2 b) 2 c) 8 d) 9

29) If the mode of the values : 15, 9, $X + 6$, 9, 15 is 9, then $X = \dots\dots\dots$

- a) 3 b) 9 c) 6 d) 0

30) The mean of the values : 7 , 11 , 21 , 10 and 16 is

- a) 7 b) 21 c) 10 d) 13

31) The point of intersection of the ascending and the descending accumulative frequency curves determines.....on the horizontal axis.

- a) median b) order of the median c) mean d) mode

32) If the arithmetic mean of the values : 1 , 6 , 4 , 4, 5K is 7 , then K =.....

a) 5

b) 35

c) 4

d) 20

33) $[-2, 5] - \{-2, 5\} = \dots\dots\dots$

a) $\{-2, 5\}$

b) $[-2, 5[$

c) $] -2, 5[$

d) $] -2, 5]$

34) $Q \cap Q' = \dots\dots\dots$

a) Z

b) R

c) R^*

d) \emptyset

35) $\{2, 5, 7\} - \{2, 7\} = \dots\dots\dots$

a) $\{5\}$

b) $\{2, 5\}$

c) $]2, 5[$

d) $[2, 5]$

SECOND : GEOMETRY

36) ABC is a right angle triangle at B , AC= 10 cm, $m(\angle C) = 60^\circ$, then BC =...cm

a) 2

b) 4

c) 5

d) 6

37) The point of intersection of the medians of the triangle divides each median in the ratio : 2 from vertex

a) 1

b) 2

c) 4

d) 3

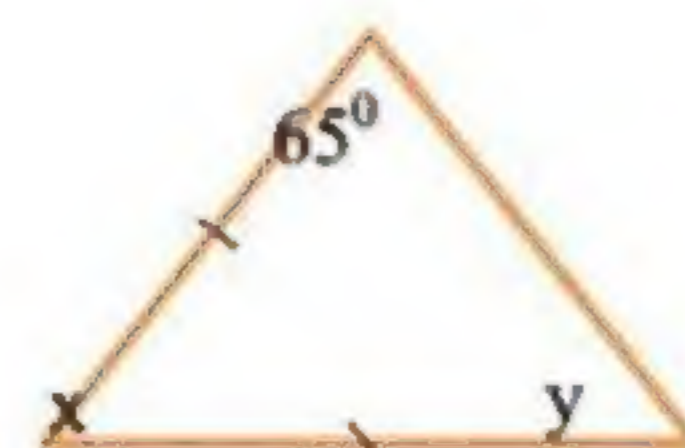
38) In the opposite figure: $x = \dots\dots\dots^\circ$

a) 65°

b) 70°

c) 50°

d) 80°



39) If the angles of a triangle are congruent , then the triangle is a/an

a) equilateral

b) isosceles

c) scalene

d) right

40) The length of any side in a triangle.....the sum of lengths of the other two sides .

a) $<$

b) $>$

c) \leq

d) \geq

41)The measure of the exterior angle of the equilateral triangle
=..... ..

- a) 30° b) 60° c) 120° d) 90°

42)The base angles of the isosceles triangle are

- a) Complementary b) supplementary c) congruent d) straight

43)If the measure of the vertex angle of an isosceles triangle is 50° ,
then the measure of each of the base angles is.....⁰

- a) 40 b) 65 c) 70 d) 130

44) In $\triangle ABC$, if $AB = AC$, $m(\angle A) = 2m(\angle B)$, then $m(\angle C) = \dots\dots\dots^0$

- a) 30 b) 45 c) 60 d) 90

45)If the triangle ABC is right at B then

- a) $AC = AB$ b) $BC < AC$ c) $AC < AB$ d) $AB = BC$

46)A triangle of two sides lengths 4 cm. & 9 cm. and has one axis of
symmetry then the length of the third side=.....

- a) 4cm b) 9 cm c) 13cm d) 15cm

47)In $\triangle ABC$ if $AB = 6$ cm. and $AC = 7$ cm., then $BC \in \dots\dots\dots$

- a) $] 6, 13]$ b) $[6, 7]$ c) $] 1, 13 [$ d) $[1, 7 [$

48)Which of the following numbers can't be lengths of sides of a
triangle?

- a) 3, 4, 4 b) 4, 3, 5 c) 4, 3, 6 d) 4, 3, 7

49)If ABC is a right – angled triangle at A & $AB = AC$, then $m(\angle B)$
=.....^o

- a) 30 b) 45 c) 60 d) 90

50)The number 5, 7 can be lengths of sides of triangle.

- a) 12 b) 3 c) 2 d) 13

51)If ABC is right –angle at B, $AC = 10$ cm, then the length of the
median drawn from B =.....

- a) 5 b) 20 c) 7.5 d) 10

- 52) The number of axis of symmetry in the scalene triangle =.....
 a) 0 b) 1 c) 2 d) 3
- 53) In the triangle ABC, if $BC = 9\text{ cm}$, $AB = 7\text{ cm}$, then $m(\angle C)$
 $m(\angle A)$
 a) = b) < c) > d) \leq
- 54) The number of medians in the right angle triangle =.....
 a) 3 b) 0 c) 1 d) 2
- 55) If the measure of an angle in a right-angled triangle is 45° , then the triangle is.....
 a) isosceles b) equilateral c) obtuse d) scalene
- 56) The lengths of two sides in an isosceles triangle are 2 cm , 5 cm , then the perimeter of this triangle iscm
 a) 12 b) 7 c) 10 d) 9
- 57) The side opposite to the angle 30° in a right-angled triangle =..... length of the hypotenuse
 a) square b) twice c) half d) triple
- 58) XYZ is a triangle in which $m(\angle Z) = 70^\circ$, $m(\angle Y) = 60^\circ$, then YZ XY
 a) < b) > c) = d) TWICE
- 59) If M is the point of intersection of the medians of $\triangle ABC$, D is the midpoint of BC, then $AD =$
 a) 2 AM b) 4 MD c) $\frac{2}{3}\text{ MD}$ d) $\frac{3}{2}\text{ AM}$
- 60) $\triangle ABD$ is an obtuse-angled triangle at B, C is midpoint of BD, then the greatest side in length is
 a) AB b) AC c) BD d) AD

Prep. [2]

First Term - Algebra

Final Revision

Part 2 - Problems



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Exercises

[A] : Choose The Correct Answer : -

| | | |
|----|---|---|
| 1 | $\sqrt[3]{a^3} = \dots\dots\dots$ A) a B) a^2 C) a^3 D) 2 a | A |
| 2 | $\sqrt{3} (\sqrt{11} + \sqrt{3}) = \dots\dots\dots$ A) $3\sqrt{11} + 2$ B) $\sqrt{33} + 3$ C) $11\sqrt{3} + 2$ D) $2\sqrt{11} + 3$ | B |
| 3 | $\sqrt{25} = \sqrt[3]{\dots\dots\dots}$ A) 5 B) 15 C) 125 D) -5 | C |
| 4 | $\sqrt[3]{\dots\dots\dots} = 4$ A) 4 B) 16 C) 64 D) 1 | C |
| 5 | $\sqrt{25} + \sqrt[3]{-27} = \sqrt{\dots\dots\dots}$ A) 8 B) 4 C) 2 D) 5 | B |
| 6 | $\sqrt[3]{64} = \sqrt{X}$, then 2 X = $\dots\dots\dots$ A) 4 B) 8 C) 16 D) 32 | D |
| 7 | $\sqrt[3]{64} = \sqrt{\dots\dots\dots}$ A) 64 B) 8 C) 16 D) 32 | C |
| 8 | $\sqrt[3]{27} = \sqrt{X+3}$, then X = $\dots\dots\dots$ A) 3 B) 6 C) 9 D) 12 | B |
| 9 | $\sqrt[3]{64 + \dots\dots\dots} = 5$ A) 5 B) 61 C) 100 D) 25 | B |
| 10 | If : $X^3 = 64$, then : $\sqrt{X} = \dots\dots\dots$ A) 4 B) -4 C) 2 D) -2 | C |
| 11 | $X^2 = 5$, then $(X + \sqrt{5})^2 = \dots\dots\dots$ or $\dots\dots\dots$ A) 0 , 4 B) 0 , 20 C) 0 , 25 D) 0 , 10 | B |

| | | |
|----|--|---|
| 12 | $\frac{x^3}{y^3} = \frac{8}{27}$, then $(\frac{y}{x})^2 =$ | D |
| | A) $\frac{8}{27}$ B) $\frac{2}{3}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ | |
| 13 | $x^2 - y^2 = 60$ and $x + y = 5$, then $x - y =$ | D |
| | A) 5 B) 60 C) 300 D) 12 | |
| 14 | The solution set of the equation : $x^2 = 2$ in R is | D |
| | A) $\{\sqrt{2}\}$ B) $\{-\sqrt{2}\}$ C) $\{2\}$ D) $\{\sqrt{2}, -\sqrt{2}\}$ | |
| 15 | The solution set of the equation : $x^2 + 2 = 0$ in R is | A |
| | A) \emptyset B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\pm\sqrt{3}$ | |
| 16 | The solution set of the equation : $x^3 + 8 = 0$ in R is | B |
| | A) $\{2\}$ B) $\{-2\}$ C) $\{2\sqrt{2}\}$ D) $\{2, -2\}$ | |
| 17 | The solution set of the equation : $x^3 + 9 = 8$ in R is | D |
| | A) $\{8\}$ B) $\{9\}$ C) $\{3\}$ D) $\{-1\}$ | |
| 18 | The S.S of the equation : $(x^2 + 3)(x^2 + 1) = 0$ in R is | A |
| | A) \emptyset B) $\{3, 1\}$ C) $\{-3, -1\}$ D) $\{\pm 3, \pm 1\}$ | |
| 19 | The S.S of the equation : $(x^2 + 1)(x - 5) = 0$ in R is | B |
| | A) \emptyset B) $\{5\}$ C) $\{5, \pm 1\}$ D) $\{\pm 1\}$ | |
| 20 | The S.S of the equation : $(x^2 + 3)(x^3 + 1) = 0$ in R is | D |
| | A) \emptyset B) $\{1\}$ C) $\{\pm 3, \pm 1\}$ D) $\{-1\}$ | |
| 21 | The S.S of the equation : $(x^2 - 1)(x + 5) = 0$ in R is | C |
| | A) \emptyset B) $\{-5\}$ C) $\{-5, \pm 1\}$ D) $\{\pm 1\}$ | |
| 22 | The S.S of the equation : $x(x^3 - 1) = 0$ in R is | B |
| | A) \emptyset B) $\{0, 1\}$ C) $\{0, \pm 1\}$ D) $\{1\}$ | |
| 23 | If : $\frac{3}{a+2}$ is a rational number the $a \neq$ | C |
| | A) 3 B) 5 C) -2 D) zero | |
| 24 | If $n \in \mathbb{Z}_+$, $n < \sqrt{26} < n + 1$, then $a =$ | B |
| | A) 25 B) 5 C) 24 D) -5 | |

| | | |
|----|---|---|
| 25 | The irrational number in the following numbers is A) $\sqrt{\frac{1}{9}}$ B) $\sqrt{\frac{1}{4}}$ C) $\sqrt{3}$ D) $\sqrt[3]{27}$ | C |
| 26 | The irrational number lies between 2 and 3 is A) $\sqrt{10}$ B) $\sqrt{7}$ C) 2.5 D) $\sqrt{3}$ | B |
| 27 | The area of a square whose side length is $\sqrt{3}$ cm = cm ² A) $4\sqrt{3}$ B) + C) 3 D) 6 | C |
| 28 | The square whose area is 10 cm ² , its side length is cm A) 5 B) -5 C) $\sqrt{10}$ D) $-\sqrt{10}$ | C |
| 29 | The multiplicative inverse of $\frac{\sqrt{3}}{3}$ is A) $\sqrt{3}$ B) 1 C) 3 D) $-\sqrt{3}$ | A |
| 30 | The multiplicative inverse of $\sqrt{5}$ is A) $-\sqrt{5}$ B) $\frac{\sqrt{5}}{5}$ C) $5\sqrt{5}$ D) $\frac{5}{\sqrt{5}}$ | B |
| 31 | The multiplicative inverse of $(\sqrt{3} + \sqrt{2})$ is A) $\sqrt{3}$ B) $\sqrt{2}$ C) $\sqrt{3} + \sqrt{2}$ D) $\sqrt{3} - \sqrt{2}$ | D |
| 32 | The additive inverse of $(3 - 2\sqrt{2})$ is A) $3 + 2\sqrt{2}$ B) 3 C) 2 D) $2\sqrt{2} - 3$ | D |
| 33 | $Q \cap Q^c =$ A) {0} B) \emptyset C) R D) Q | B |
| 34 | $Q \cup Q^c =$ A) {0} B) \emptyset C) R D) Q | C |
| 35 | $R_+ \cup R_- =$ A) R B) Q C) N D) R^* | D |
| 36 | $\sqrt[3]{8}$ $]-\infty, 4[$ A) \in B) \notin C) \subset D) $\not\subset$ | A |
| 37 | $5 \in$ A) $]5, \infty[$ B) $]-\infty, 5[$ C) (3, 5) D) $[-5, \infty[$ | D |

| | | |
|----|--|---|
| 38 | $R =$ A) $R_+ \cup R_-$ B) $R_+ \cap R_-$ C) $] -\infty, \infty[$ D) $Q \cap Q^c$ | C |
| 39 | $R_+ =$ A) $] 0, \infty[$ B) $] -\infty, 0[$ C) $[0, \infty[$ D) $] -\infty, 0]$ | A |
| 40 | $R_- =$ A) $] 0, \infty[$ B) $] -\infty, 0[$ C) $[0, \infty[$ D) $] -\infty, 0]$ | B |
| 41 | The set of none -negative numbers = A) $] 0, \infty[$ B) $] -\infty, 0[$ C) $[0, \infty[$ D) $] -\infty, 0]$ | C |
| 42 | The set of none -positive numbers = A) $] 0, \infty[$ B) $] -\infty, 0[$ C) $[0, \infty[$ D) $] -\infty, 0]$ | D |
| 43 | $[2, 7] - \{ 2, 7 \} =$ A) \emptyset B) $[1, 6]$ C) $] 2, 7[$ D) $\{ 0 \}$ | C |
| 44 | $[-2, 5] - \{ -2, 6 \} =$ A) $] -2, 5[$ B) $] -2, 6[$ C) $] -2, 5]$ D) $[-2, 5[$ | C |
| 45 | $] 3, 5[\cup \{ 3, 5 \} =$ A) $] 3, 5[$ B) $[3, 5[$ C) $] 3, 5]$ D) $[3, 5]$ | D |
| 46 | $] -2, 2] \cup \{ -2, 0 \} =$ A) $] -2, 2[$ B) $[-2, 2[$ C) $] -2, 2]$ D) $[-2, 2]$ | B |
| 47 | $[1, 3] \cup [2, 5[=$ A) $] 1, 5[$ B) $[1, 5[$ C) $] 1, 5]$ D) $[1, 5]$ | B |
| 48 | $] -\infty, 1] \cup [-4, \infty[=$ A) R B) $[-4, \infty[$ C) $] -\infty, 1]$ D) Q | A |
| 49 | $] -1, 3] \cap [-3, -1] =$ A) \emptyset B) $\{ -1 \}$ C) $\{ -3 \}$ D) $\{ 3 \}$ | B |
| 50 | $[1, 5] \cap [-2, 3] =$ A) $\{ 1, 3 \}$ B) $] 1, 3[$ C) $[1, 3]$ D) $[1, 3[$ | C |
| 51 | $N \cap [1, 2[=$ A) \emptyset B) $\{ 1, 2 \}$ C) $\{ 1 \}$ D) $] 1, 2[$ | A |

| | | |
|----|--|---|
| 52 | $[3, 7[-] - 2, 5] =$ A) $]5, 7[$ B) $\{5, 7\}$ C) $] - 2, 3[$ D) $[3, 5]$ | A |
| 53 | The additive neutral (identity) in R is A) 0 B) 1 C) 2 D) 3 | A |
| 54 | The multiplicative neutral (identity) in R is A) 0 B) 1 C) 2 D) 3 | B |
| 55 | If $a \in \mathbb{N}$, $b \in \mathbb{Z}$ and $c \in \mathbb{R}$, then $a + b + c \in$ A) \mathbb{N} B) \mathbb{Z} C) \mathbb{Q} D) \mathbb{R} | D |
| 56 | If $a \in \mathbb{R}$ and $b \in \mathbb{R}$. then $a - b$ means the sum of the number a and of inverse of the number b A) 0 B) B C) Additive D) multiplicative | C |
| 57 | The number $(1 - \sqrt{3})(1 + \sqrt{3})$ is a number A) Natural B) Rational C) Irrational D) Prime | B |
| 58 | The simplest form of the expression : $(\sqrt{3} - 1)^2 (\sqrt{3} + 1)^2$ is A) 3 B) 4 C) 13 D) 25 | B |
| 59 | The multiplicative inverse of $(\sqrt{7} + \sqrt{3})(\sqrt{7} - \sqrt{3})$ is A) 4 B) -4 C) $\frac{1}{4}$ D) $-\frac{1}{4}$ | C |
| 60 | If : $X = \sqrt{5} + \sqrt{3}$, $y = \sqrt{5} - \sqrt{3}$, then $X - y =$ A) $2\sqrt{3}$ B) $5\sqrt{3}$ C) $2\sqrt{5}$ D) 2 | A |
| 61 | If : $X = \sqrt{7} + \sqrt{3}$, $y = \sqrt{7} - \sqrt{3}$, then $(X - y)^3 =$ A) Zero B) 24 C) $24\sqrt{3}$ D) 196 | C |
| 62 | The conjugate number of : $\sqrt{5} + \sqrt{3}$ is A) $\sqrt{5} + \sqrt{3}$ B) $\sqrt{5} - \sqrt{3}$ C) $2\sqrt{3}$ D) $2\sqrt{5}$ | B |
| 63 | The conjugate number of : $\frac{2}{\sqrt{5} - \sqrt{3}} =$ A) $\sqrt{5} + \sqrt{3}$ B) $\sqrt{5} - \sqrt{3}$ C) $2\sqrt{3}$ D) $2\sqrt{5}$ | B |
| 64 | The conjugate number of : $\sqrt{3} - \frac{5}{\sqrt{5}} =$ A) $\sqrt{5} + \sqrt{3}$ B) $\sqrt{5} - \sqrt{3}$ C) $2\sqrt{3}$ D) $2\sqrt{5}$ | A |

| | | |
|----|---|---|
| 65 | If : $\frac{X}{5-\sqrt{5}} = 5 + \sqrt{5}$, then X = | B |
| | A) 25 B) 20 C) 15 D) 10 | |
| 66 | If : $\frac{1}{X} = \sqrt{5} - 2$, then X = | B |
| | A) $\sqrt{5} - 2$ B) $\sqrt{5} + 2$ C) $\sqrt{5} - 5$ D) 0 | |
| 67 | If : $X = \frac{2}{\sqrt{5}-\sqrt{3}}$ and $XY = 2$, then y = | B |
| | A) $\sqrt{5} + \sqrt{3}$ B) $\sqrt{5} - \sqrt{3}$ C) $2\sqrt{3}$ D) $2\sqrt{5}$ | |
| 68 | A rectangle of dimensions $(\sqrt{3} - 1)$, $(\sqrt{3} + 1)$ cm. its area is | A |
| | A) 2 B) 4 C) $2\sqrt{3}$ D) $2\sqrt{5}$ | |
| 69 | If : $X = \sqrt{3} + 2$, $y = \sqrt{3} - 2$, then $(XY, X+y) =$ | D |
| | A) (1, 1) B) (-1, 4) C) (-1, 9) D) $(-1, 2\sqrt{3})$ | |
| 70 | If : $X = \sqrt[3]{3} + 7$, $y = \sqrt[3]{3} - 7$, then $(X+y)^3 =$ | C |
| | A) 3 B) 7 C) 24 D) 64 | |
| 71 | $\sqrt[3]{54} + \sqrt[3]{-2} =$ | C |
| | A) $\sqrt[3]{52}$ B) $\sqrt[3]{2}$ C) $2\sqrt[3]{2}$ D) $4\sqrt[3]{2}$ | |
| 72 | $\sqrt[3]{2} + \sqrt[3]{2} =$ | C |
| | A) $\sqrt[3]{2}$ B) $\sqrt[3]{4}$ C) $\sqrt[3]{8}$ D) $\sqrt[3]{16}$ | |
| 73 | $\sqrt[3]{\frac{2}{3}} \times \sqrt[3]{-12} =$ | B |
| | A) 2 B) -2 C) 3 D) 5 | |
| 74 | $\sqrt[3]{24} + \sqrt[3]{-81} + \sqrt[3]{3} =$ | B |
| | A) $\sqrt[3]{3}$ B) 0 C) $6\sqrt[3]{3}$ D) $-\sqrt[3]{3}$ | |
| 75 | If the side length of a square is L cm. and its area is 30 cm^2 , then the area of the square whose side length equals 2 L cm. is | C |
| | A) 30 B) 60 C) 120 D) 180 | |

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|----|---|---|
| 76 | Volume of a cube whose edge length 2 L cm. is cm^3 A) 2 L B) 8 L C) $8 L^3$ D) L^3 | C |
| 77 | The lateral area of a cube whose edge length is L cm. = cm^2 A) L^2 B) $4L^3$ C) L^3 D) $4L^2$ | D |
| 78 | The edge length of a cube is 4 cm. , then its total area = cm^2 . A) 4 B) 64 C) 96 D) 144 | C |
| 79 | If the edge length of a cube is 5 cm. , then its volume = cm^3 . A) 5 B) 25 C) 125 D) 325 | C |
| 80 | The sum of lengths of all edges of a cube is 36 cm. , then its total area equals cm^2 A) 3 B) 12 C) 54 D) 36 | C |
| 81 | If the volume of a cube is 216 cm^3 , then the length of its edge is A) 6 B) 12 C) 24 D) 36 | A |
| 82 | The edge length of a cube whose volume is 3 cm^3 iscm. A) $\sqrt{3}$ 3 1 D) $\sqrt[3]{3}$ | D |
| 83 | The edge length of a cube whose volume is $2\sqrt{2} \text{ cm}^3$ is cm A) $\sqrt{2}$ B) 2 C) 8 D) 1.5 | A |
| 84 | If the volume of a cube is $40\sqrt{5} \text{ cm}^3$, then its edge length iscm. A) $\sqrt{5}$ B) $8\sqrt{5}$ C) $2\sqrt{5}$ D) $5\sqrt{2}$ | C |
| 85 | The volume of a cuboid whose dimensions are : $\sqrt{2}$, $\sqrt{3}$, $\sqrt{6}$ cm is cm^3 A) 6 B) 2 C) 3 D) 36 | A |
| 86 | If a volume of a cube is 27 cm^3 , then the total area is cm^2 A) 3 B) 9 C) 36 D) 54 | D |
| 87 | If a volume of a cube is 27 cm^3 , then the lateral area is cm^2 A) 3 B) 9 C) 36 D) 54 | C |
| 88 | If a area of one face of a cube is 25 cm^2 , then it's volume = cm^3 A) 25 B) 5 C) 125 D) 1 | C |

| | | |
|-----|---|---|
| 89 | Area of the square of side length is 21 cm. = cm^2 A) 441 B) 400 C) 525 D) 625 | A |
| 90 | The volume of a sphere which its diameter 6 cm. = cm^3 A) 4π B) 9π C) 36π D) 27π | C |
| 91 | A volume of the sphere equals $32\sqrt{3}\pi \text{ cm}^3$, its radius length A) $\sqrt{3} \text{ cm}$ B) 3 cm C) $2\sqrt{3} \text{ cm}$ D) 9 cm | C |
| 92 | The radius length of a right circular cylinder whose volume is $40\pi \text{ cm}^3$ and its height 10 cm. = cm. A) 5 B) 3 C) 2 D) 1 | C |
| 93 | If a volume of a cube is $L^3 \text{ cm}^3$, then the total area is cm^2 A) $4L^3$ B) $6L^3$ C) $4L^2$ D) $6L^2$ | D |
| 94 | The S.S. of equation : $\sqrt{2}X = 2$ in $\mathbb{R} =$ A) $\{\sqrt{2}\}$ B) $\sqrt{2}$ C) $\{2\}$ D) $\{2\sqrt{2}\}$ | B |
| 95 | The S.S. of equation : $X + \sqrt{2} = \sqrt{8}$ in $\mathbb{R} =$ A) $\{\sqrt{2}\}$ B) $\sqrt{8}$ C) $\sqrt{6}$ D) $\sqrt{4}$ | A |
| 96 | The S.S. of the inequality : $0 < X + 5 \leq 6$ in \mathbb{R} is (a) $]5, 11]$ (b) $] -1, 5]$ (c) $[-5, 1[$ (d) $] -5, 1]$ | D |
| 97 | The S.S. of the inequality : $-X > 2$ in \mathbb{R} is (a) $\{2\}$ (b) $] -\infty, 2[$ (c) $]2, \infty[$ (d) $] -\infty, -2[$ | D |
| 98 | If $-1 < -X \leq 5$, then the S.S. in \mathbb{R} is (a) $[-5, 1[$ (b) $[5, -1[$ (c) $] -5, 1]$ (d) $] -5, 1[$ | A |
| 99 | The S.S. of equation : $\sqrt{2}X = 2$ in \mathbb{R} is (a) $\{\sqrt{2}\}$ (b) $\sqrt{2}$ (c) $\{2\}$ (d) $\{2\sqrt{2}\}$ | B |
| 100 | $\{X : X \in \mathbb{R}, X < 1\} =$ (a) $0, -1, -2, \dots$ (b) $] -\infty, 1]$ (c) $] -\infty, 1[$ (d) $] -\infty, 0]$ | C |
| 101 | If : $X \in \mathbb{R}, 1 - 7X > -8 $, then $X <$ (a) 1 (b) -1 (c) $\frac{9}{7}$ (d) 0 | B |

| | | | | | | | | | | | | | | |
|-----|---|-----|---|---|---|---|---|-----|---|---|---|---|---|---|
| 102 | If : $2 < X < 5$, then $3 X - 1 \in \dots\dots\dots$ (a) $]3 , 12[$ (b) $]6 , 14[$ (c) $]5 , 15[$ (d) $]5 , 14[$ | D | | | | | | | | | | | | |
| 103 | Which of the following represent linear relation ? A) $Xy = 2$ B) $X^2 = \frac{1}{y}$ C) $\frac{X}{y} = 1$ D) $y = X^2 + 4$ | C | | | | | | | | | | | | |
| 104 | Which of the following satisfies the relation : $2 X + y = 5$? A) $(-3 , 3)$ B) $(1 , 3)$ C) $(3 , 1)$ D) $(2 , 2)$ | B | | | | | | | | | | | | |
| 105 | $(3 , 2)$ satisfies the relation A) $Y + X = 5$ B) $Y - X = 5$ C) $3 Y - X = 2$ D) $2 X + Y = 1$ | A | | | | | | | | | | | | |
| 106 | $(3 , 2)$ does not satisfy the relation A) $Y + X = 5$ B) $X - Y = 1$ C) $Y + X = 7$ D) $3 Y - X = 3$ | C | | | | | | | | | | | | |
| 107 | Value of b where $(-3 , 2)$ satisfies the relation : $3 X + by = 1$ is A) 3 B) 5 C) 4 D) 0 | B | | | | | | | | | | | | |
| 108 | If : $(a , 1)$ satisfies the relation : $2 X + 3y = 7$, then a = A) 2 B) -2 C) 4 D) 3 | A | | | | | | | | | | | | |
| 109 | If : $(k , 2 k)$ satisfies the relation : $3 X + 2 y = 14$, then k = A) 2 B) -2 C) 7 D) 0 | A | | | | | | | | | | | | |
| 110 | <p> The opposite table shows the relation between X and y , which is</p> <table border="1" data-bbox="1134 1771 1793 1941"><tr><td>X</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>y</td><td>1</td><td>3</td><td>5</td><td>7</td><td>9</td></tr></table> <p>(a) $y = X + 4$ (b) $y = X + 1$ (c) $y = 2 X - 1$ (d) $y = 3 X - 2$</p> | X | 1 | 2 | 3 | 4 | 5 | y | 1 | 3 | 5 | 7 | 9 | C |
| X | 1 | 2 | 3 | 4 | 5 | | | | | | | | | |
| y | 1 | 3 | 5 | 7 | 9 | | | | | | | | | |
| 111 | The slope of the straight line parallel to the $X -$ axis is A) Positive B) Negative C) Zero D) Undefined | C | | | | | | | | | | | | |
| 112 | The slope of the straight line parallel to the $Y -$ axis is A) Positive B) Negative C) Zero D) Undefined | D | | | | | | | | | | | | |
| 113 | The slope of horizontal line is A) 1 B) Zero C) -1 D) Undefined | B | | | | | | | | | | | | |
| 114 | Slope of straight line passes through $(-2 , 3)$ and $(2 , 3)$ is A) 2 B) 1 C) Zero D) Undefined | C | | | | | | | | | | | | |

| | | |
|-----|---|---|
| 115 | Slope of straight line passes through $(-3, 1)$ and $(2, 5)$ is A) $\frac{4}{5}$ B) $-\frac{6}{1}$ C) $\frac{5}{4}$ D) $-\frac{1}{6}$ | A |
| 116 | Slope of straight line passes through $(3, y)$ and $(5, -2)$ is -3 , then $y = \dots\dots\dots$ A) 2 B) 4 C) 6 D) -30 | B |
| 117 | If the Slope of straight line $ax + by + 1 = 0$ is undefined, then A) $a = b$ B) $a = \text{zero}$ C) $b = \text{zero}$ D) $a = -b$ | C |
| 118 | Relation : $X - 5 = 0$ is represented by a st. line whose slope is. . . A) 0 B) -5 C) 5 D) Undefined | D |
| 119 | In the opposite figure : The slope of the straight line L is (a) positive. (b) negative. (c) zero. (d) undefined. | C |
| 120 | The slope of the straight line L in the opposite figure is (a) positive. (b) negative. (c) zero. (d) undefined. | B |
| 121 | In the opposite figure : The slope of the straight line L is (a) zero. (b) undefined. (c) 1 (d) $\frac{1}{2}$ | C |
| 122 | The mean of the values : 2 , 5 , 4 , 5 is (a) 4 (b) 5 (c) 16 (d) 8 | A |

| | | |
|-----|--|---|
| 123 | If the arithmetic mean of the values : 27 , 8 , 16 , 24 , 6 and k is 14 , then k = (a) 3 (b) 6 (c) 27 (d) 84 | A |
| 124 | If the mean of marks of 5 pupils is 20 , then the total of their marks = marks. (a) 4 (b) 15 (c) 25 (d) 100 | D |
| 125 | The lowest limit of a set is 4 and the other limit is 8 , then its centre is (a) 2 (b) 4 (c) 6 (d) 8 | C |
| 126 | If the lowest boundary of a set is 10 and the upper boundary is X and its centre is 15, then X = (a) 10 (b) 15 (c) 20 (d) 30 | C |
| 127 | If the lower limit of a set is 18 and its centre is 20 , then its length is (a) 2 (b) 19 (c) 22 (d) 4 | D |
| 128 | The arithmetic mean of the values : $3 - a$, 5 , 1 , 4 , $2 + a$ equals (a) 1 (b) 2 (c) 3 (d) 15 | C |
| 129 | The mean of the values : $2 - a$, 4 , 1 , 5 , $3 + a$ is (a) 1 (b) 2 (c) 3 (d) 15 | C |
| 130 | The order of the median of the set of values : 8 , 4 , 7 , 6 , 5 is (a) 7 (b) 6 (c) 3 (d) 5 | C |
| 131 | If the order of the median of a set of values is the fourth , then the number of these values is (a) 3 (b) 5 (c) 7 (d) 9 | C |
| 132 | If the median of the set of the values : 27 , 45 , 19 , 24 and 28 is X , then X = (a) 24 (b) 27 (c) 28 (d) 45 | B |
| 133 | The median of the values : 1 , 2 , 5 , 3 and 4 is (a) 3 (b) 4 (c) 5 (d) 2 | A |

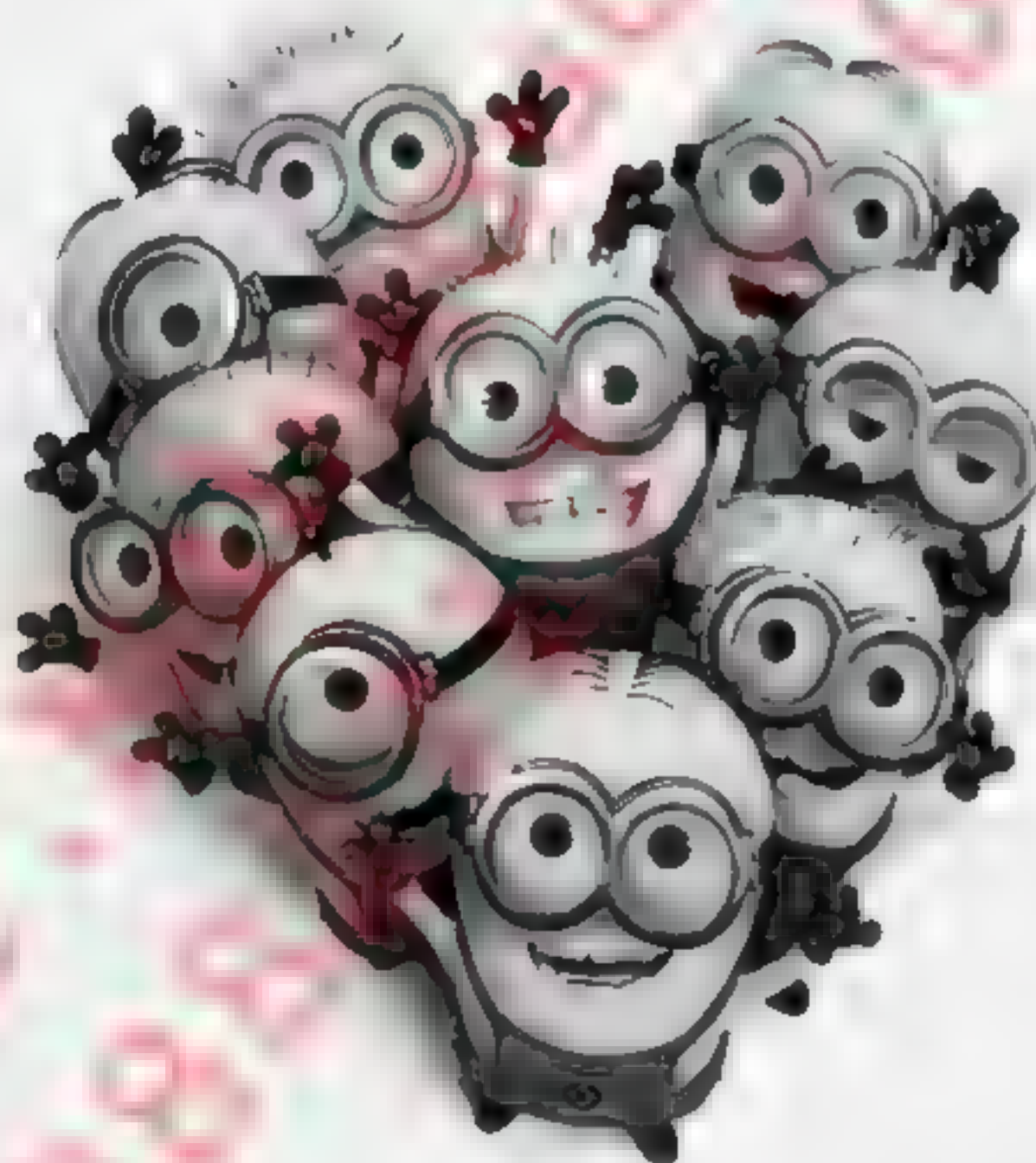
| | | |
|-----|---|---|
| 134 | The median of the set of the values : 3 , 6 , 6 , 7 , 9 , 11 , 13 , 14 , 15 and 20 is (a) 9 (b) 10 (c) 11 (d) 20 | B |
| 135 | The mode of the values : 3 , 5 , 3 , 6 , 3 and 8 is (a) 3 (b) 5 (c) 6 (d) 8 | A |
| 136 | If the mode of the set of the values : 4 , 11 , 8 , 2 X is 4 , then X = (a) 2 (b) 4 (c) 6 (d) 8 | A |
| 137 | The mode of the values : 15 , 9 , X + 1 , 9 , 15 is 9 , then X = (a) 9 (b) 14 (c) 10 (d) 8 | D |
| 138 | The mode of the set of values : 5 , 9 , 5 , X - 2 , 9 is 9 , then X = (a) 5 (b) 57 (c) 9 (d) 11 | D |

Prep. [2]

First Term - Geometry

Final Revision

Part 2 - Problems



Mr. Mahmoud Esmail

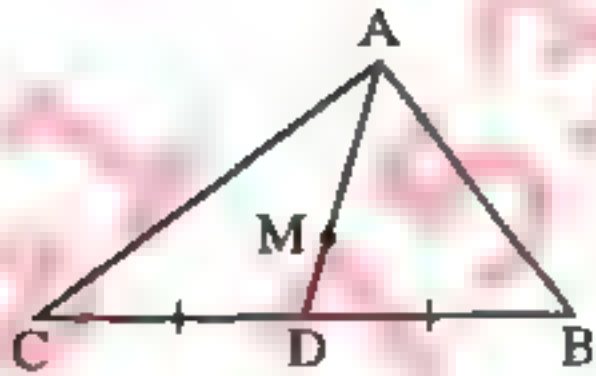
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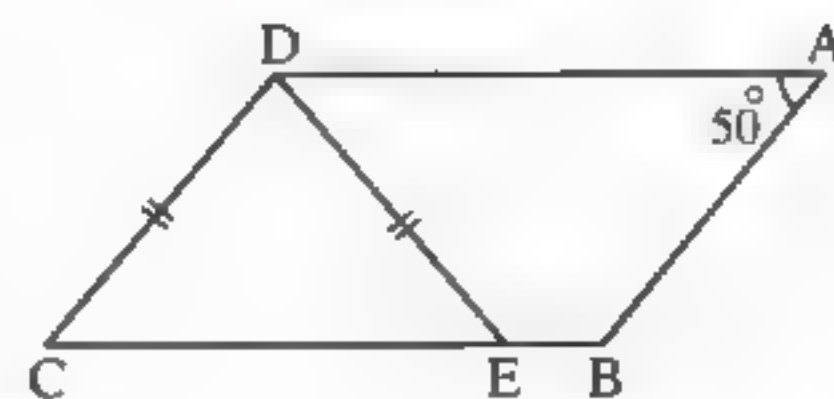
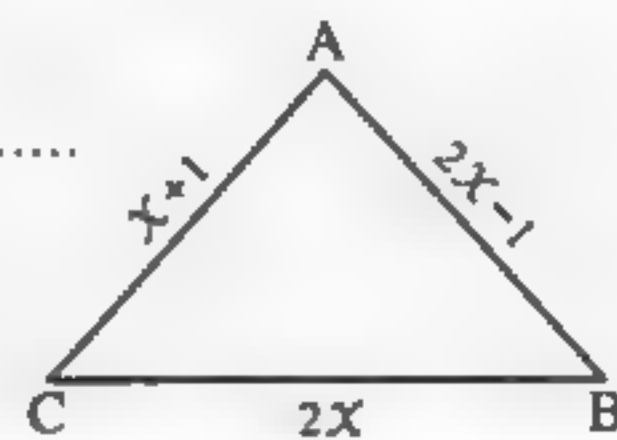
Exercises

[A] : Choose The Correct Answer : -

| | | |
|---|---|---|
| 1 | The medians of the triangle intersect at point. (a) 1 (b) 2 (c) 3 (d) 4 | A |
| 2 | The number of medians in the right-angled triangle = (a) 3 (b) 2 (c) 1 (d) 0 | A |
| 3 | The point of intersection of the medians in the triangle divides each of them by the ratio from the vertex. (a) 1 : 3 (b) 3 : 1 (c) 2 : 1 (d) 1 : 2 | C |
| 4 | The point of concurrence of the medians of the triangle divides each median in the ratio of from the base. (a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 3 : 1 | A |
| 5 | If \overline{AD} is a median of triangle ABC , and M is the point of intersection of the medians , then $AM = \dots\dots AD$ (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$ | B |
| 6 | If \overline{AD} is a median in $\triangle ABC$, M is the point of intersection of its medians , then $AM = \dots\dots MD$ (a) 2 (b) $\frac{1}{2}$ (c) 3 (d) $\frac{1}{3}$ | A |
| 7 | If \overline{XE} is a median in $\triangle XYZ$, M is the point of intersection of its medians , then $EM = \dots\dots XE$ (a) $\frac{1}{2}$ (b) 2 (c) $\frac{1}{3}$ (d) $\frac{2}{3}$ | C |
| 8 | In $\triangle ABC$: If $AD = 6 \text{ cm.}$ is a median and M is a point of concurrent , then $MA = \dots\dots \text{cm.}$ (a) 6 cm. (b) 3 cm. (c) 2 cm. (d) 4 cm. | D |
| 9 | The length of the hypotenous of the right-angled triangle = the length of the median which drawn from the vertex of the right-angle. (a) half (b) twice (c) third (d) quarter | B |

| | | |
|----|---|--|
| 10 | <p>If \overline{AD} is a median of $\triangle ABC$, M is the point of intersection of its medians and $AM = 6$ cm. , then $AD = \dots\dots\dots$</p> <p>(a) 12 cm. (b) 6 cm. (c) 18 cm. (d) 9 cm.</p> | D |
| 11 | <p>Choose the correct answer :</p> <p>In the opposite figure :</p> <p>\overline{AD} is a median in $\triangle ABC$, M is the point of intersection of the medians, $MD = 2$ cm. , then $AD = \dots\dots\dots$ cm.</p> <p>(a) 2 (b) 4 (c) 6 (d) 8</p> |  <p>C</p> |
| 12 | <p>In the right-angled triangle, the length of the median from the vertex of the right angle equals $\dots\dots\dots$ the length of hypotenuse.</p> <p>(a) half (b) twice (c) third (d) forth</p> | A |
| 13 | <p>In $\triangle ABC$ which is right at B, if $AC = 20$ cm. , then the length of the median of the triangle drawn from B equals $\dots\dots\dots$</p> <p>(a) 10 cm. (b) 8 cm. (c) 6 cm. (d) 5 cm.</p> | A |
| 14 | <p>The length of the side opposite to the angle of measure 30° in the right-angled $\dots\dots\dots$ the length of the hypotenuse.</p> <p>(a) twice (b) half (c) square (d) equals</p> | B |
| 15 | <p>Triangle ABC : If $m(\angle A) = 30^\circ$, $m(\angle B) = 90^\circ$, then $BC = \dots\dots\dots$</p> <p>(a) $\frac{1}{2} AB$ (b) $\frac{1}{2} AC$ (c) $2 AB$ (d) $2 AC$</p> | B |
| 16 | <p>In $\triangle ABC$ if : $m(\angle B) = 90^\circ$ and $m(\angle A) = 60^\circ$, then $AC = \dots\dots\dots AB$</p> <p>(a) 2 (b) $\frac{1}{2}$ (c) $\frac{1}{2}$ (d) $\frac{1}{3}$</p> | A |
| 17 | <p>In $\triangle ABC$: $m(\angle A) = 30^\circ$, $m(\angle B) = 90^\circ$, $AC = 10$ cm. , then $BC = \dots\dots\dots$ cm.</p> <p>(a) 20 (b) 15 (c) 10 (d) 5</p> | D |
| 18 | <p>In the rectangle ACBD, if $AC = 10$ cm. , then $BD = \dots\dots\dots$</p> <p>(a) 5 (b) 10 (c) 15 (d) 20</p> | B |
| 19 | <p>In any isosceles triangle, the type of the base angles is $\dots\dots\dots$</p> <p>(a) acute. (b) right. (c) obtuse. (d) reflex.</p> | A |
| 20 | <p>The base angles of the isosceles triangle are $\dots\dots\dots$</p> <p>(a) congruent. (b) alternate. (c) corresponding. (d) supplementary.</p> | A |

| | | |
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| 21 | If measure of one of the two base angles of the isosceles triangle equals 40° then the measure of the vertex angle = $^\circ$ (a) 40 (b) 100 (c) 80 (d) 50 | B |
| 22 | In $\triangle ABC : AB = AC$, $m(\angle B) = 50^\circ$, then $m(\angle A) =$ $^\circ$ (a) 65 (b) 80 (c) 50 (d) 100 | B |
| 23 | In the isosceles triangle , if the measure of one of the two base angle is 70° , then the measure of its vertex angle is (a) 70° (b) 110° (c) 20° (d) 40° | D |
| 24 | In a triangle ABC : If $AB = AC$ and $m(\angle A) = 40^\circ$, then $m(\angle C) =$ (a) 40° (b) 70° (c) 140° (d) 50° | B |
| 25 | If the measure of an angle of the isosceles triangle is 100° , then the measure of one of the other angles = (a) 50° (b) 80° (c) 40° (d) 100° | C |
| 26 | The triangle whose sides lengths are 2 cm. , $(x + 1)$ cm and 5 cm. becomes an isosceles triangle when $x =$ cm. (a) 1 (b) 2 (c) 3 (d) 4 | D |
| 27 | The triangle whose sides lengths are 3 cm. , $(x + 5)$ and 9 becomes an isosceles if $x =$ cm. (a) 3 (b) 4 (c) 5 (d) 6 | B |
| 28 | In the opposite figure : ABC is a triangle in which : $m(\angle B) = m(\angle C)$, then $x =$ (a) 1 (b) 2 (c) 3 (d) 4 | B |
| 29 | ABCD is a parallelogram : $DE = DC$, $m(\angle A) = 50^\circ$, then $m(\angle EDC) =$ (a) 50° (b) 60° (c) 70° (d) 80° | D |
| 30 | In $\triangle ABC$: if $AB = AC$ and $m(\angle A) = 60^\circ$, if its perimeter is 18 cm. , then $BC =$ cm. (a) 18 (b) 6 (c) 3 (d) 60 | B |



| | | |
|----|---|---|
| 31 | ΔABC , $AB = AC$, D is the midpoint of \overline{BC} , then \overline{AD} is (a) median. (b) altitude. (c) bisector of the vertex angle. (d) all the previous. | D |
| 32 | The measure of exterior angle of an equilateral triangle = (a) 30° (b) 60° (c) 120° (d) 180° | C |
| 33 | In ΔXYZ : if $XY = XZ$, then the exterior angle at the vertex Z is (a) acute. (b) obtuse. (c) right. (d) reflex. | B |
| 34 | The axis of symmetry of a line segment is the straight line which is (a) Perpendicular to it. (b) its bisector. (c) parallel to it. (d) the perpendicular bisector. | D |
| 35 | If $A \in$ the axis of symmetry of \overline{BC} , then $\overline{AB} \dots\dots\dots \overline{AC}$ (a) \perp (b) \equiv (c) $//$ (d) $=$ | B |
| 36 | The number of axis of symmetry in the scalene triangle is (a) 1 (b) zero (c) 3 (d) 4 | B |
| 37 | The number of axes of symmetry in the isosceles triangle is (a) 1 (b) 2 (c) 3 (d) zero | A |
| 38 | The equilateral triangle has axes of symmetry. (a) one (b) two (c) three (d) otherwise | C |
| 39 | The triangle which has no axes of symmetry is triangles. (a) scalene (b) isosceles (c) equilateral (d) otherwise | A |
| 40 | If ΔABC has one axes of symmetry and $m(\angle ABC) = 140^\circ$, then $m(\angle A) = \dots\dots\dots$ (a) 30° (b) 20° (c) 40° (d) 60° | B |
| 41 | ΔABC in which $m(\angle A) = m(\angle B) = 65^\circ$, then it has axis (axes) of symmetry. (a) 1 (b) 2 (c) 3 (d) zero | A |
| 42 | The quadrilateral ABCD in which \overline{BD} is an axis of symmetry of \overline{AC} may be (a) a rhombus (b) a rectangle (c) a parallelogram (d) a trapezium | A |

| | | |
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| 43 | In $\triangle ABC$, $AB > AC$, then $m(\angle C)$ $m(\angle B)$ (a) $<$ (b) $>$ (c) $=$ (d) \leq | B |
| 44 | In $\triangle ABC$, $AB > AC$, $m(\angle C) = 70^\circ$, then $m(\angle B)$ may be (a) 70° (b) 50° (c) 80° (d) 75° | B |
| 45 | In $\triangle ABC$: $AB = AC$, $m(\angle B) = 65^\circ$, then : AC BC (a) $<$ (b) $>$ (c) $=$ (d) \leq | B |
| 46 | In $\triangle ABC$: If $AB = 9$ cm. , $BC = 6$ cm. , $AC = 7$ cm. , then the smallest angle is (a) $\angle BAC$ (b) $\angle ABC$ (c) $\angle ACB$ (d) $\angle BCA$ | A |
| 47 | $\triangle XYZ$, $m(\angle X) = 60^\circ$, $m(\angle Y) = 40^\circ$, then XZ XY (a) $<$ (b) $>$ (c) $=$ (d) nothing. | A |
| 48 | $\triangle ABC$, $m(\angle B) = 90^\circ$, then AB AC (a) $>$ (b) $=$ (c) $<$ (d) \geq | C |
| 49 | In $\triangle XYZ$: If $m(\angle X) = 30^\circ$ and $m(\angle Y) = 80^\circ$, then (a) $XY < XZ$ (b) $XY > XZ$ (c) $XY = XZ$ (d) $XY < YZ$ | A |
| 50 | The triangle in which the measure of two angles are 74° and 53° is triangle. (a) a right-angled (b) an isosceles (c) an equilateral (d) a scalene | B |
| 51 | In $\triangle ABC$ if : $m(\angle B) = 60^\circ$ and $m(\angle C) = 50^\circ$, then the shortest side in triangle ABC is (a) \overline{AC} (b) \overline{BC} (c) \overline{BC} (d) \overline{AB} | D |
| 52 | In the triangle ABC , if $m(\angle B) \approx 90^\circ$, then the greatest side in length is (a) \overline{AB} (b) \overline{BC} (c) \overline{AC} (d) \overline{XY} | C |
| 53 | The triangle ABC is obtuse-angled triangle at B , then the longest side is (a) AB (b) BC (c) AC (d) AD | C |
| 54 | $\triangle XYZ$ is right-angled at Y , then XZ YZ (a) $=$ (b) $>$ (c) \leq (d) $<$ | B |

| | | |
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| 55 | In ΔABC : $m(\angle B) + m(\angle C) = 3 m(\angle A)$, then $m(\angle A) = \dots\dots\dots^\circ$ (a) 30 (b) 60 (c) 45 (d) 90 | C |
| 56 | The sum of lengths of any two sides in any triangle $\dots\dots\dots$ the length of the third side. (a) is less than (b) is greater than (c) equals (d) otherwise | B |
| 57 | If the lengths of two sides in an isosceles triangle are 2 cm. and 5 cm. , then the length of the third side is $\dots\dots\dots$ cm. (a) 2 (b) 3 (c) 5 (d) 7 | C |
| 58 | ΔABC , $AB = 2$ cm. , $BC = 7$ cm. , then AC may equal $\dots\dots\dots$ (a) 2 cm. (b) 5 cm. (c) 9 cm. (d) 8 cm. | D |
| 59 | The lengths of two sides in a triangle are 4 cm. and 9 cm. and it has on axis of symmetry , then the length of third side is $\dots\dots\dots$ (a) 4 cm. (b) 5 cm. (c) 9 cm. (d) 13 cm. | C |
| 60 | In ΔABC if : $AB = 3$ cm. and $BC = 5$ cm. , then $AC \in \dots\dots\dots$ (a) $]3 , 8]$ (b) $[2 , 8]$ (c) $]2 , 8 [$ (d) $]2 , 5 [$ | C |
| 61 | Which of the following can be sides to draw the triangle $\dots\dots\dots$ (a) 5 cm. , 6 cm. , 12 cm. (b) 5 cm. , 6 cm. , 11 cm. (c) 5 cm. , 6 cm. , 4 cm. (d) 4 cm. , 6 cm. , 10 cm. | C |
| 62 | How many different triangles can be formed with sides of lengths a whole number of cm. and each with perimeter 7 cm. ? (a) 1 (b) 2 (c) 3 (d) 4 | B |
| 63 | If the length of one side of a triangle is 5 cm. , then which of the following could be the lengths of the other two sides ? (a) 2 cm. and 3 cm. (b) 7 cm. and 2 cm. (c) 2 cm. and 2 cm. (d) 4 cm. and 6 cm. | D |
| 64 | In the triangle ABC , $AC \dots\dots\dots (AB - BC)$ (a) $>$ (b) \geq (c) \leq (d) $<$ | A |

Answer the following questions.

❖ Choose the correct answer from the given ones:

1) If The radius length of a sphere is 6cm. then its volume is.....

- (a) $6 \pi \text{ cm}^3$ (b) $36 \pi \text{ cm}^3$ (c) $72 \pi \text{ cm}^3$ (d) $288 \pi \text{ cm}^3$

2) If The lowest boundary of a set is 10 and the upper boundary is x and its centre is 15, then $x = \dots \dots \dots$

- (a) 10 (b) 15 (c) 20 (d) 30

3) $(2\sqrt[3]{2})^3 = \dots \dots \dots$

- (a) 4 (b) 8 (c) 16 (d) 40

4) The median of the values :34 , 23 , 25 , 40 , 22 ,4 is.....

- (a) 22 (b) 23 (c) 24 (d) 25

5) If The arithmetic mean of the values: 27 , 8 , 16 , 24 , 6 , k is 14 , then $k = \dots \dots \dots$

- (a) 3 (b) 6 (c) 27 (d) 84

6) If The volume of a cube is 27 cm^3 , then the area of one of its faces is $\dots \dots \dots$

- (a) 3 cm^2 (b) 9 cm^2 (c) 36 cm^2 (d) 54 cm^2

7) If The mode of the set of value: 4 , 11 , 8 , 2 , x is 4 , then $x = \dots \dots \dots$

- (a) 2 (b) 4 (c) 6 (d) 8

8) If The arithmetic mean of the set of values' 18 , 23 , 29 , $2k - 1$, k is 18 , then $k = \dots \dots \dots$

- (a) 1 (b) 7 (c) 29 (d) 90

9) If The lowest limit of a set is 4 and the upper limit is 8 , then its centre is

- (a) 2 (b) 4 (c) 6 (d) 8

10) If : $\frac{3}{4}$ The volume of a sphere is $8\pi \text{ cm}^3$, then its radius length is.. . . .

- (a) 64 (b) 8 (c) 4 (d) 2

11) $\sqrt{3\frac{3}{8}} = \sqrt{\quad}$

- (a) $\frac{3}{8}$ (b) $\frac{8}{3}$ (c) $\frac{27}{8}$ (d) $\frac{729}{64}$

12) IF : $x = \sqrt{7} + \sqrt{2}$ and $y = \sqrt{7} - \sqrt{2}$, then $x - y = \dots$

- (a) $7\sqrt{2}$ (b) $2\sqrt{2}$ (c) $\sqrt{41}$ (d) $2\sqrt{2}$

13) $\sqrt{3}(\sqrt{11} + \sqrt{3}) = \dots$

- (a) $3\sqrt{11} + 2$ (b) $\sqrt{33} + 3$ (c) $11\sqrt{3} + 2$ (d) $2\sqrt{11} + 3$

14) If the order of the median of a set of values is the fourth , then number of values is

- (a) 3 (b) 5 (c) 7 (d) 9

15) If The mode of the set of values : 5 , 9 , 5 , $x - 2$, 9 is 9, then $x = \dots$

- (a) 5 (b) 57 (c) 9 (d) 11

16) The number $(1 - \sqrt{3})(1 + \sqrt{3})$ is a number

- (a) natural (b) rational (c) irrational (d) prime

17) If the beginning of a set is 18 and its centre is 20, then its length is

- (a) 2 (b) 4 (c) 9 (d) 10

18) $[-1, 3] \cap [-3, -1]$ equals

- (a) \emptyset (b) $\{-3\}$ (c) $\{-1\}$ (d) $\{3\}$

19) The S.S of the equation: $x^2 + 3 = 0$ in \mathbb{R} is =

- (a) \emptyset (b) $\{-\sqrt{3}\}$ (c) $\{\sqrt{3}\}$ (d) $\{\pm\sqrt{3}\}$

20) The simplest form of the expression : $(\sqrt{3} - 1)^2 (\sqrt{3} + 1)^2$ is

- (a) $2(\sqrt{3} - 1)$ (b) $(\sqrt{3} + 1)^2$ (c) 4 (d) 13

21) $\mathbb{R} =$

- (a) $\mathbb{R} \cup \mathbb{R}$ (b) $\mathbb{R} \cap \mathbb{R}$ (c) $[-\infty, \infty]$ (d) $\mathbb{R} \cap \mathbb{R}$

22) The multiplicative inverse of the number $\sqrt{5}$ is

- (a) $\frac{5}{\sqrt{5}}$ (b) $-\sqrt{5}$ (c) $\frac{1}{\sqrt{5}}$ (d) $5\sqrt{5}$

22) The order of the median of a set of values .8 , 4 , 7 , 6 , 5 is.....

- (a) 7 (b) 6 (c) 3 (d) 5

23) If , $x = \sqrt{3} + 2$ and $y = \sqrt{3} - \sqrt{2}$, then $(x - y, x + y) =$

- (a) $(-1, 2\sqrt{3})$ (b) $(1, 2\sqrt{3})$
(c) $(5, 2\sqrt{3})$ (d) $(-1, 4)$

24) If : $(2, -5)$ satisfies the relation :

$3x - y + c = 0$, then $c =$

- (a) 11 (b) 1 (c) -11 (d) -1

25) $] -3, 5] \cap [0, 3 [= \dots \dots \dots$

- (a) $[0, 3]$ (b) $[0, 3 [$ (c) $] -3, 0 [$ (d) $[3, 5 [$

26) $(3, 2)$ satisfies the relation.....

- (a) $y + x = 5$ (b) $y - x = 5$
(c) $3y + x = 2$ (d) $2x + y = 1$

27) IF $x = \sqrt{7} + \sqrt{3}$, $y = \sqrt{7} - \sqrt{3}$, then $x \cdot y = \dots \dots \dots$

- (a) 4 (b) 10 (c) 40 (d) 58

28) If the order of the median of a set of values is the fourth, then number of these values is.....

- (a) 3 (b) 5 (c) 7 (d) 9

29) $\frac{1}{2} \sqrt{20} + 10 \sqrt{\frac{1}{5}} = \dots \dots \dots$

- (a) $3\sqrt{5}$ (b) $4\sqrt{5}$ (c) 5 (d) 12

29) The median of the values 34, 23, 25, 40, 22, 14 is.....

- (a) 22 (b) 33 (c) 24 (d) 25

30) The S.S of the equation: $x^3 + 27 = 0$ in $\mathbb{R} = \dots \dots \dots$

- (a) $\{ 3 \}$ (b) $\{ -3 \}$ (c) $\{ 3\sqrt{3} \}$ (d) $\{ 3\sqrt{3}, -3\sqrt{3} \}$

31) IF $x = \sqrt{5} + \sqrt{2}$, $y = \sqrt{5} - \sqrt{2}$, then $x - y = \dots \dots \dots$

- (a) $2\sqrt{2}$ (b) $5\sqrt{2}$ (c) $2\sqrt{5}$ (d) 3

32) If $-2x > -6$, then $x \in \dots \dots \dots$

- (a) $] -\infty, 3 [$ (b) $] 3, \infty [$ (c) $] -2, -6 [$ (d) $] 1, 3 [$

33) The lateral surface area of right circular cylinder =.....

- (a) $\pi r h$ (b) $4\pi r^2$ (c) $\pi r^2 h$ (d) $2\pi r h$

34) If : $\frac{3}{a+2}$ is a rational number then $a \neq$

- (a) 3 (b) 5 (c) -2 (d) zero

35) The mean of the values :7 , 15 , 19 , 14 and 15 is.....

- (a) 14 (b) 15 (c) 16 (d) 17

36) The solution set for the equation: $x^3 + 9 = 8$ in \mathbb{R} is.....

- (a) { 8 } (b) { 9 } (c) { 3 } (d) { -1 }

37) The multiplicative inverse of $\frac{\sqrt{3}}{6}$ is.....

- (a) $\frac{-\sqrt{3}}{6}$ (b) $6\sqrt{3}$ (c) $2\sqrt{3}$ (d) $-2\sqrt{3}$

38) The mode of the values: 2, 5 , 3 , 6 , 3 and 8 is.

- (a) 3 (b) 5 (c) 6 (d) 8

39) $[1, 5] \cap]-2, 3[=$

- (a) { 1, 3 } (b)]1, 3[(c) [1, 3] (d) [1, 3 [

40) The arithmetic mean of the values: $3 - a$, 5 , 1 , 4 , $2 + a$ equals

.....

- (a) 1 (b) 2 (c) 3 (d) 15

41) $[2, 7] - \{2, 7\} =$

- (a) [1, 6] (b) \emptyset (c)]2, 7[(d) [2, 7]

42) The radius length of a right circular cylinder whose volume is $40\pi \text{ cm}^3$ and its height 10 cm=..... cm

- (a) 5 (b) 3 (c) 2 (d) 1

43) If : $(-1, 5)$ satisfies the relation : $3x + ky = 7$, then $k = \dots\dots\dots$

- (a) -2 (b) 8 (c) $\frac{4}{5}$ (d) 2

44) Let $A(3, -5)$, $B(5, -1)$, then the slope of AB = $\dots\dots\dots$

- (a) $-\frac{1}{3}$ (b) -3 (c) 3 (d) $\frac{1}{3}$

45) If the mean of the ages of 5 students is 15 years , then the total of their ages is $\dots\dots\dots$ years.

- (a) 75 (b) 3 (c) 50 (d) 25

46) If The mode of the value : 5 , 7 , 21 , 7 , 10, 7 is = $\dots\dots\dots$

- (a) 7 (b) 6 (c) 5 (d) 21

47) $\sqrt[3]{(-8)^2} = \dots\dots\dots$

- (a) 2 (b) -2 (c) 4 (d) -4

48) The irrational number lies between 3 and 4 is $\dots\dots\dots$

- (a) 3.5 (b) $\frac{1}{8}$ (c) $\sqrt{20}$ (d) $\sqrt{13}$

49) Which of the following ordered pairs satisfies the relation:

$$2x + y = 5?$$

- (a) (-3 , 3) (b) (1 , 3) (c) (3 , 1) (d) (2 , 2)

50) The median of the set of values : 15 , 22 , 9 , 11 and 33 is $\dots\dots\dots$

- (a) 9 (b) 15 (c) 18 (d) 90

51) The S S of the inequality. $-x > 3$ in \mathbb{R} is $\dots\dots\dots$

- (a) {3} (b) $]3, \infty[$ (c) $] - \infty, 3[$ (d) $] - \infty, -5[$

52) If : $(2m, m)$ satisfies the relation : $2x + 3y = 35$, then $m = \dots\dots\dots$

- (a) 7 (b) 5 (c) 14 (d) 10

53) The edge length of a cube whose volume is 3 cm^3 iscm

- (a) $\sqrt{3}$ (b) 3 (c) -3 (d) $\sqrt[3]{3}$

54) The S.S of the equation, $\sqrt{2} x = 2$ in \mathbb{R} is =

- (a) $\{\sqrt{2}\}$ (b) $\{2\}$ (c) $\sqrt{2}$ (d) $\{2\sqrt{2}\}$

55) The slope of the straight line parallel to y-axis is

- (a) positive (b) negative (c) zero (d) undefined

32) The solution set for the equation: $x^2 = 2$ in \mathbb{R} is=

- (a) $\{\sqrt{2}\}$ (b) $\{-\sqrt{2}\}$ (c) $\{2\}$ (d) $\{\sqrt{2}, -\sqrt{2}\}$

56) The cube whose volume is 8 cm^3 then its total area =.....

- (a) 16 (b) 24 (c) 96 (d) 4

57) The slope of the straight line passes through $(-3, 1)$ and

$(2, 5)$ =.....

- (a) $\frac{4}{5}$ (b) $-\frac{6}{1}$ (c) $\frac{5}{4}$ (d) $-\frac{1}{6}$

58) $\sqrt{8} - \sqrt{2} =$

- (a) $\sqrt{2}$ (b) 2 (c) $\sqrt{6}$ (d) 4

59) If The lowest boundary of a set is 10 and the upper boundary is x and its centre is 15, then x

- (a) 10 (b) 15 (c) 20 (d) 30

60) The arithmetic mean of the values: 9, 6, 5, 14, k is 7, then

$k =$

- (a) 1 (b) 5 (c) 34 (d) 35

61) The order of the median of a set of values 4 , 5 , 6 , 7 , 8

is.....

- (a) third (b) fourth (c) fifth (d) sixth

62) If The radius length of a sphere is 3 cm. then its volume is.....

- (a) $4 \pi \text{ cm}^3$ (b) $9 \pi \text{ cm}^3$ (c) $27 \pi \text{ cm}^3$ (d) $36 \pi \text{ cm}^3$

63) The multiplicative inverse of the number $\sqrt{7}$ is ,

- (a) $-\sqrt{7}$ (b) $\frac{1}{\sqrt{7}}$ (c) $\frac{\sqrt{7}}{7}$ (d) $\frac{7}{\sqrt{7}}$

64) The S S of the inequality: $-1 < x+3 <$ in \mathbb{R} is

- (a) $[-4, 0]$ (b) $[2, 6]$ (c) $]6, 6[$ (d) $] -4, 0 [$

65) The order of the median of a sets of values 4 , 7 , 8 , 6 , 5 is.....

- (a) the third (b) the fourth (c) the fifth (d) the second

66) The mode of the sets of value : 14 , 11 , 10 , 11 , 14, 15 , 11

is

- (a) 14 (b) 11 (c) 15 (d) 10

67) The volume of a sphere which is diameter 6 cm =.....

- (a) 4π (b) 9π (c) 27π (d) 36π

68) The volume of a sphere equals $32\sqrt{3} \pi \text{ cm}^3$, then its radius length

- (a) $\sqrt{3} \text{ cm}$ (b) 3 cm (c) $2\sqrt{3} \text{ cm}$ (d) 9cm

69) The value of b where $(-3, 2)$ satisfies the relation: $3x + by = 1$

is.....

- (a) 3 (b) 5 (c) 4 (d) 0

70) The volume of a cube is $40\sqrt{5}\text{cm}^3$, then its edge length is.....cm.

- (a) $\sqrt{5}$ (b) $8\sqrt{5}$ (c) $2\sqrt{5}$ (d) $5\sqrt{2}$

71) If $(a, 1)$ satisfies the relation $2x + 3y = 7$, then $a = \dots\dots\dots$

- (a) 2 (b) -2 (c) 4 (d) 3

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SERIES

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AT MATH

72) The median of the values 2, 8, 6, 4 and 5 is

- (a) 2 (b) 4 (c) 6 (d) 5

73) $\sqrt[3]{24} + \sqrt[3]{-81} + \sqrt[3]{3} = \dots\dots\dots$

- (a) $\sqrt[3]{3}$ (b) 0 (c) $6\sqrt[3]{3}$ (d) $-\sqrt[3]{3}$

74) $|\sqrt[3]{-125}| = \sqrt{\dots\dots\dots}$

- (a) 5 (b) 5 (c) 25 (d) 25

75) $\sqrt{9} + \sqrt[3]{-8} = \dots\dots\dots$

- (a) 1 (b) 5 (c) 6 (d) $-\sqrt{3}$

76) The S.S of the inequality $-x > 5$ is

- (a) $\{5\}$ (b) $[5, \infty)$ (c) $(-\infty, 5]$ (d) $(-\infty, -5]$

77) $[3, 6] \cap [4, 7] = \dots\dots\dots$

- (a) $[3, 7]$ (b) $[4, 6]$ (c) $[4, 6[$ (d) $\{4, 6\}$

78) The mean of the values :7, 7, 5, 3 and 6 is

- (a) 7 (b) 5.6 (c) 6 (d) 28

79) The volume of a cube is 27cm^3 , then its lateral area cm^2

- (a) 9 (b) 27 (c) 36 (d) 5

80) $\sqrt{25} = \sqrt{\dots\dots\dots}$

- (a) 5 (b) 15 (c) 125 (d) -5

81) The multiplicative inverse of the number $\sqrt{3}$ is

- (a) 3 (b) $\frac{1}{3}$ (c) $-\sqrt{3}$ (d) $\frac{\sqrt{3}}{3}$

82) The median of the values :11, 10, 12, 9, 19 is.....

- (a) 9 (b) 10 (c) 11 (d) 19



81) The multiplicative inverse of the number $\sqrt{3}$ is

- (a) 3 (b) $\frac{1}{3}$ (c) $-\sqrt{3}$ (d) $\frac{\sqrt{3}}{3}$

82) The median of the values :11 , 10 , 12 , 9, 19 is.....

- (a) 9 (b) 10 (c) 11 (d) 19

83) The irrational number lies between 2 and 3 is

- (a) $\sqrt{10}$ (b) $\sqrt{7}$ (c) 2.5 (d) $\sqrt{3}$

33) If $x^3 + 9 = 1$ where $x \in \mathbb{R}$, then $x = \dots\dots\dots$

- (a) -8 (b) -2 (c) 2 (d) 8

84) If: $(2k, k)$ satisfies: $2x + 3y = 35$, then $k = \dots\dots\dots$

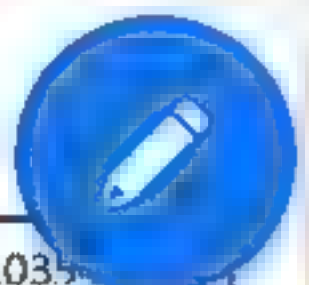
- (a) 7 (b) -7 (c) 5 (d) -5

85) The volume of a sphere whose its diameter 6 cm³ =.....

- (a) 228 (b) 12π (c) 36π (d) 288π

86) $[2, 7] - \{2, 7\} = \dots\dots\dots$

- (a) $[2, 6]$ (b) \emptyset (c) $]2, 7[$ (d) $\{0\}$



Answer the following questions :

(1) Choose the correct answer :

1) Each of the two base angles in a triangle that has one axis of symmetry is angle

- a) a straight b) an obtuse c) a right d) an acute

2) If the ratio between the length of each side of a triangle and its perimeter is $1 : 3$, then the number of axis of symmetry of this triangle is

- a) zero b) 1 c) 2 d) 3

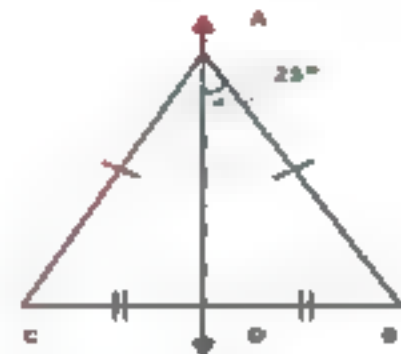
3) ABC is a right-angled triangle at B , \overline{BD} is a median in it and $BD = 5$ cm , then $AC =$ cm

- a) 2.5 cm b) 10 cm c) $\frac{10}{3}$ cm d) 7.5 cm

4) In the opposite figure :

$m(\angle B) =$

- a) 25° b) 50°
c) 65° d) 70°



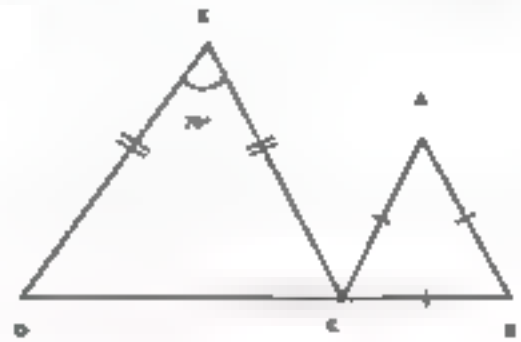
5) If the angles of a triangle are congruent, then this triangle is triangle.

- a) a right-angled b) an isosceles
c) an obtuse d) an equilateral

6) In the opposite figure :

$m(\angle ACE) = \dots\dots\dots$

- a) 120° b) 70°
c) 65° d) 110°



7) If the measure of one of the two base angles in an isosceles triangle is 30° then the triangle is

- a) an obtuse-angled triangle b) an acute-angled triangle
c) a right-angled triangle d) an equilateral triangle

8) $\triangle ABC$ which is right-angled at B , $m(\angle A) = 45^\circ$, then number of its symmetric line =

- a) zero b) 1 c) 2 d) 3

9) The point of intersection of the medians of a triangle divides each of them in the ratio from the vertex.

- a) 3 : 2 b) 1 : 2 c) 2 : 1 d) 3 : 1

10) $\triangle ABC$ in which : $m(\angle A) = 50^\circ$, $m(\angle B) = 65^\circ$, then

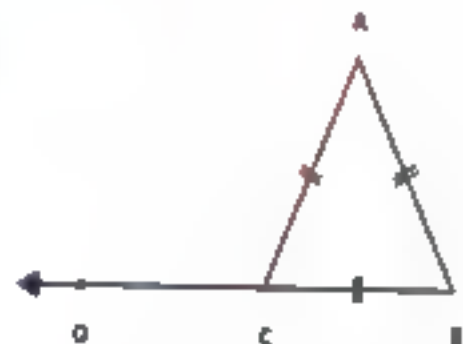
- a) $m(\angle A) = m(\angle C)$ b) $AB = BC$
c) $m(\angle C) = 50^\circ$ d) $AB = AC$

11) In the opposite figure :

$\triangle ABC$ is equilateral , then $m(\angle ACD)$

=

- a) 45° b) 60°
c) 120° d) 135°



12) In $\triangle ABC$ which is right angled at B , if $AC = 20$ cm , then the length of the median of the triangle drawn from B equals.....

- a) 10 cm b) 8 cm c) 6 cm d) 5 cm

13) XYZ is a triangle in which : $m(\angle Z) = 70^\circ$ and $m(\angle Y) = 60^\circ$, then YZ XY

- a) $>$ b) $<$ c) $=$ d) twice

14) The length which can be lengths of a triangle are

- a) 0, 3, 5 b) 3, 3, 5 c) 3, 3, 6 d) 3, 3, 7

15) The triangle in which the measure of two angles of it are 42° and 69° is

- a) an isosceles triangle. b) an equilateral.
c) a scalene triangle. d) a right-angled triangle

16) The triangle which has three axes of symmetry is Triangle.

- a) scalene. b) isosceles. c) right-angled d) equilateral

17) The sum of lengths of two sides in a triangles is the length of the third side.

- a) greater than b) smaller than
c) equals to d) twice

18) If the lengths of two sides in an isosceles triangle are 8 cm, and 4 cm , then the length of the third side is cm

- a) 4 b) 8 c) 3 d) 12

19) In $\triangle ABC$ if $m(\angle B) = 130^\circ$, then the longest side of it is

- a) \overline{BC} b) \overline{AC} c) \overline{AB} d) its median

20) $\triangle XYZ$ is an isosceles triangle in which : $m(\angle X) = 100^\circ$, then $m(\angle Y) = \dots\dots\dots^\circ$

- a) 100 b) 80 c) 60 d) 40

21) The measure of the exterior angle of the equilateral triangle equals

- a) three b) two c) one d) no one

22) $\triangle ABC$ in which : $m(A) = 50^\circ$, $m(\angle B) = 60^\circ$, then the longest side of it is

- a) \overline{AB} b) \overline{AC} c) \overline{BC} d) \overline{CB}

23) $\triangle XYZ$ is right-angled at Y, then $XZ \dots\dots\dots YZ$

- a) $>$ b) $<$ c) $=$ d) \leq

24) The length of the median drawn from the vertex of the right angle in the right-angled triangle $\approx \dots\dots\dots$ hypotenuse.

- a) third b) quarter c) half d) twice

25) If the measure of one of the two base angles in the isosceles triangle is 40° , then the measure of the vertex angle is

- a) 100° b) 55° c) 70° d) 110°

26) Which of the following numbers can be the lengths of sides of a triangle?

- a) 4, 6, 10 b) 4, 6, 8 c) 2, 3, 6 d) 4, 5, 10

- 27) The number of axes of symmetry of the isosceles triangle equals
- a) 3 b) 2 c) 1 d) zero
- 28) If $\triangle ABC$ is a right-angled at B , $AB = 6$ cm , and $BC = 8$ cm, then the length of the median drawn from B is cm.
- a) 10 b) 8 c) 6 d) 5
- 29) $\triangle ABC$ in which $m(\angle B) > m(\angle C)$, then AC AB.
- a) greater than b) smaller than
c) equals d) smaller than or equals
- 30) The number of axes of symmetry in the isosceles triangle =
- a) 1 b) 2 c) 3 d) 4
- 31) The point of concurrence of the medians of the triangle divides each median in the ratio : from the base.
- a) 2 : 1 b) 1 : 1 c) 5 : 10 d) 4 : 2
- 32) In the triangle ABC , if : $AB = AC$ and $m(\angle A) = 40^\circ$, then: $m(\angle C)$
- a) 40° b) 50° c) 70° d) 140°
- 33) In the triangle ABC , if : $AB > AC$, then : $m(\angle C)$ $m(\angle B)$.
- a) $<$ b) $>$ c) $=$ d) \leq

34) The length of the median drawn from the vertex of the right angle in the right-angled triangle = the length of the hypotenuse of the triangle.

- a) 2 b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{1}{4}$

35) $\triangle ABC$ in which : $m(\angle B) = 70^\circ$, $m(\angle C) = 50^\circ$, then BC AB

- a) $>$ b) $<$ c) $=$ d) \neq

36) The number of axes of symmetry in the equilateral triangle =

- a) 0 b) 2 c) 3 d) 1

37) If the length of two sides in a triangle is 3 , 7 , then the length of the third side is

- a) 3 b) 8 c) 4 d) 10

38) If the length of median drawn from a vertex of a triangle equals half the length of the opposite side to this vertex then the angle at this vertex is

- a) acute b) obtuse c) reflex d) right

39) AD is a median of $\triangle ABC$ where M is the point of intersection of its median then AM = AD

- a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) $\frac{1}{2}$ d) 2

40) The triangle ABC , $m(\angle B) = 70^\circ$, $m(\angle C) = 50^\circ$, then BC AB .

- a) $<$ b) $>$ c) \leq d) $=$

41) If AD is a median of triangle ABC , M is the point of intersection of the medians of triangle ABC , then

AM = AD

- a) $\frac{1}{2}$ b) 2 c) $\frac{1}{3}$ d) $\frac{2}{3}$

42) In triangle ABC , if $m(\angle C) = 60^\circ$, $m(\angle B) = 90^\circ$, then

AC =

- a) 2 BC b) $\frac{1}{2}$ BC c) 2 AB d) $\frac{1}{2}$ AB

43) The measure of exterior angle of an equilateral triangle

\approx

- a) 60° b) 90° c) 120° d) 180°

44) The numbers 4 , , 7 can be length sides of a triangle.

- a) 11 b) 3 c) 6 d) 2

45) In $\triangle XYZ$ if $XY = YZ = XZ$, then $m(\angle X) =$

- a) 30° b) 60° c) 90° d) 180°

46) The measure of the exterior angle of the equilateral triangle

- a) 60° b) 90° c) 120° d) 180°

47) If $\triangle ABC$ is right-angled at A and $AB = AC$, then $m(\angle B)$

=

- a) 30° b) 45° c) 60° d) 90°

48) If the measure of one of the two base angles in the isosceles triangle = 30° , then the triangle is

- a) obtuse angled. b) acute angled
c) right angled d) equilateral triangle.

49) In $\triangle XYZ$, if $XY = XZ$, then the exterior angle at the vertex Z is

- a) acute b) obtuse c) right d) reflex

50) In $\triangle ABC$: If $CA = CB$ and $m(\angle C) = m(\angle A)$, then $m(\angle B)$ =

- a) 30° b) 60° c) 90° d) 120°

51) If the sum of measures of two congruent angles in a triangle = $\frac{2}{3}$ the sum of measures of its angles , then the triangle is

- a) right angled b) isosceles c) equilateral d) scalene

52) If ABCD is a quadrilateral in which $AB = AD$ and $BC = DC$, then \overline{AC} is \overline{BD}

- a) parallel to b) equal
c) the axis of symmetry of d) congruent to

53) The triangle whose sides lengths are 2 cm , $(x+3)$ cm , and 5cm becomes an isosceles triangle when $x = \dots\dots\dots$ cm.

- a) 1 b) 2 c) 3 d) 4

- 54) If the length of any side in a triangle = $\frac{1}{3}$ of the perimeter of the triangle , then the number of axes of symmetry of the triangle =
- a) 1 b) 2 c) 3 d) zero
- 55) If \overline{XY} is the axis of symmetry of \overline{AB} , then
- a) $AX = BY$ b) $AX = BX$ c) $BY = XY$ d) $AY = BX$
- 56) In the rhombus ABCD , the axis of symmetry of \overline{AC} is
- a) \overline{BD} b) \overline{AB} c) \overline{AD} d) \overline{CD}
- 57) In the square ABCD , \overline{BD} is the axis of symmetry of
- a) \overline{AB} b) \overline{AC} c) \overline{AD} d) \overline{CD}
- 58) If m is the point of intersection of the medians of $\triangle ABC$ and D is the midpoint of \overline{BC} then $AD = \dots\dots\dots$
- a) 2 AM b) $\frac{2}{3}$ AM c) $\frac{3}{2}$ AM d) 4 MD
- 59) The point of intersection of the medians of the triangle divides each of them with the ratio : from the vertex
- a) 2 : 1 b) 1 : 2 c) 3 : 1 d) 3 : 2
- 60) If M is the point of intersections of the medians of the the triangle in $\triangle ABC$ and \overline{AX} is a median of length 6 cm , then AM equals
- a) 1 cm b) 2 cm c) 3 cm d) 4 cm

- 61) ABCD is a rectangle ,M is the point of intersection of its diagonals. If the length of the diagonal is 6 cm , then the length of the median \overline{AM} equals
- a) 2 cm b) 3 cm c) 6 cm d) 12 cm
- 62) The measure of the exterior angle of the equilateral triangle equals
- a) 30° b) 60° c) 90° d) 120°
- 63) If the measure of the vertex angle of the isosceles triangle equals 50° , then the measure of each angle of its base equals.....
- a) 40° b) 65° c) 70° d) 130°
- 64) If the measure of one of the two base angles of the isosceles triangle equals 40° , then the measure of the vertex angle is
- a) 40° b) 50° c) 80° d) 100°
- 65) The two base angles of the isosceles triangle are
- a) complementary b) supplementary
c) congruent d) straight angles
- 66) The axis of symmetry of the line segment is the straight line which
- a) is parallel to the line segment.
b) is perpendicular to the line segment.
c) bisects the line segment.
d) is the perpendicular bisector of the line segment.

67) If $XA = XB$ and $YA = YB$, then \overline{XY} \overline{AB}

- a) $//$ b) \perp c) $=$ d) \equiv

68) If A lies on the axis of symmetry of \overline{XY} , then \overline{AX} \overline{AY}

- a) $//$ b) \perp c) $=$ d) \equiv

69) In $\triangle ABC$ if $m(\angle B) > m(\angle C)$, then

- a) $AB < AC$ b) $AB = AC$ c) $AB > AC$ d) $\widehat{AB} \equiv \widehat{BC}$

70) In $\triangle XYZ$ if $XY < XZ$, then

- a) $m(\angle Y) < m(\angle Z)$ b) $m(\angle Y) > m(\angle Z)$
c) $m(\angle Y) = m(\angle Z)$ d) $m(\angle Z) > m(\angle X)$

71) If $\triangle ABC$ is right-angled at B , then

- a) $AC < AB$ b) $AC < BC$ c) $AB < AC$ d) $BC = AB$

72) $\triangle ABD$ is obtuse-angled at B and C is the midpoint of \overline{BD} ,
then the longest side is

- a) \overline{AB} b) \overline{AC} c) \overline{AD} d) \overline{BD}

73) The sum of lengths of any two sides in a triangle isthe
length of the third side.

- a) smaller than b) greater than c) equal d) twice

74) The length of any side in the triangle The sum of
lengths of the other two sides.

- a) smaller than b) greater than c) equal d) twice

75) If the length of two sides in an isosceles triangle are 2 cm
and 5 cm , then the length of the third side is

- a) 2 cm b) 3 cm c) 5 cm d) 7 cm

76) The length of two sides in a triangle are 4 cm and 9 cm and it has one axis of symmetry , then the length of third side is

- a) 4 cm b) 5 cm c) 9 cm d) 13 cm

77) Which of the following set of numbers can be length of sides of a triangle ?

- a) 2, 3, 4 b) 2, 3, 5 c) 2, 3, 6 d) 2, 3, 7

78) Which of the following set of numbers can not be lengths of sides of a triangle?

- a) 3, 4, 4 b) 3, 4, 5 c) 3, 4, 6 d) 3, 4, 7

79) $\triangle ABC$ in which $m(\angle C) = 65^\circ$ and $m(\angle A) = 75^\circ$, then

- a) $AB > BC$ b) $AB < AC$ c) $BC > AB$ d) $AB = AC$

80) In $\triangle ABC$ in which $m(\angle B) + m(\angle C) = 2m(\angle A)$, then $m(\angle A)$ equals

- a) 30° b) 60° c) 45° d) 90°

81) The sum of lengths of any two sides in a triangle is the length of the third side.

- a) less than b) greater than c) equal d) half

82) The lengths of any side in a triangle the sum of lengths of the two other sides.

- a) $>$ b) $<$ c) $=$ d) twice

83) Which of the following numbers cannot be the lengths of sides of a triangle

- a) 7, 7, 5 b) 9, 9, 9 c) 3, 6, 12 d) 3, 4, 5

84) If the lengths of two sides in a triangle are 7 cm and 4 cm ,
then the length of the third side can be

- a) 1 cm b) 2 cm c) 3 cm d) 4 cm

85) If the lengths of two sides of an isosceles triangle are 3 cm
and 7 cm , then the length of the third side =

- a) 7 cm b) 3 cm c) 4 cm d) 10 cm

86) A triangle has one axis of symmetry , the length of two sides
in it are 4 cm and 8 cm , then its perimeter =

- a) 16 cm b) 20 cm c) 24 cm d) 30 cm

87) In $\triangle ABC$: if $AB = 3\text{ cm}$, $BC = 5\text{ cm}$ and $AC = x\text{ cm}$, then
 $x \in$

- a) $]3, 5[$ b) $]2, 5[$ c) $]5, 8[$ d) $]2, 8[$

88) If the lengths of two sides of a triangle are 5 cm and 10 cm ,
then the length of the third side belongs to

- a) $[10, 15[$ b) $]5, 15[$ c) $]5, 10[$ d) $[10, 15[$

(2) Complete each of the following :

- 1) The number of axes of symmetry in the equilateral triangle equals
- 2) The length of the median which is drawn from the vertex of the right angle in the right-angled triangle equals
- 3) The bisector of the vertex angle of the isosceles triangle.....
- 4) If the measure of one of the angles of the right-angled triangle is 45° , then the triangle is
- 5) The two base angles of the isosceles triangle are
- 6) In $\triangle ABC$, if D is the midpoint of \overline{BC} , then \overline{AD} is called.....
- 7) The number of medians of the triangle is
- 8) The medians of the triangle intersect at
- 9) The point of concurrence of the medians of the triangle divides each median in the ratio : from the vertex.
- 10) The point of the intersection of the medians of the triangle divides each of them with the ratio 2 : From the base.
- 11) The number of medians in the right-angled triangle is

- 12) The length of the median from the vertex of the right angle in the right angled triangle equals
- 13) If the length of the median draw from a vertex of a triangle equals half the length of the opposite side to this vertex , then the angle at this vertex is
- 14) The length of the side opposite to the angle of measure 30° in the right-angled triangle =
- 15) The length of the hypotenuse in thirty and sixty triangle equals the length of the side opposite the angle whose measure is 30°
- 16) The base angle of the isosceles triangle are
- 17) The measure of each angle in the equilateral triangle =
- 18) In $\triangle DEF$, if $DE = DF$, then $m(\angle E) = m(\angle \dots)$
- 19) In the isosceles triangle , if the measure of one of the two base angles is 65° , then the measure of its vertex angle
- 20) In the isosceles triangle , if the measure of the vertex angle = 40° , then the measure of one of the two base angles equals..... $^\circ$
- 21) In $\triangle ABC$, if $AB = AC$ and $m(\angle A) = 80^\circ$, then $m(\angle B) = m(\angle \dots) = \dots^\circ$

- 22) If two angles in the triangle are congruent , then the two sides opposite to these two angles are and the triangle is
- 23) If the three angles in the triangle are congruent , then the triangle is
- 24) In $\triangle ABC$, if $m(\angle A) = 50^\circ$ and $m(\angle B) = 80^\circ$, then the triangle is
- 25) If the measure of one angle in the right-angled triangle is 45° , then the triangle is
- 26) If the measure of one angle of an isosceles triangle = 60° , then the triangle is
- 27) ABC is a triangle in which $AB = AC$ and $m(\angle A) = 60^\circ$ if its perimeter = 18 cm , then $BC =$ cm.
- 28) The straight line draw from the vertex of the isosceles triangle perpendicular to the base is called
- 29) The number of axes of symmetry in the equilateral triangle
.....
- 30) The number of axes of symmetry in the isosceles triangle =
- 31) The number of axes of symmetry in the scalene triangle =

- 32) The median of the isosceles triangle drawn from the vertex angle
- 33) The bisector of the vertex angle of the isosceles triangle
- 34) The straight line passing through the vertex angle of the isosceles triangle perpendicular to its base
- 35) The axis of the line segment is
- 36) Any point belonging to the axis of a line segment is
From its two terminals.
- 37) If C belong to the axis of symmetry of \overline{AB} , the =
- 38) In $\triangle ABC$, if $m(\angle A) = m(\angle B) = 60^\circ$, then the number of axes of symmetry of $\triangle ABC$ is
- 39) In $\triangle ABC$, if $m(\angle A) \neq m(\angle B) \neq 60^\circ$, then the number of axes of symmetry of $\triangle ABC$ is
- 40) In $\triangle ABC$, if $AB = AC$, $m(\angle A) = 60^\circ$, then the number of axes of symmetry of $\triangle ABC$ is
- 41) If the measure of one of the angles of a right-angled triangle is 45° , then the n of axes of symmetry of it is
- 42) If In $\triangle ABC$ has one axis of symmetry and $m(\angle ABC) = 120^\circ$, then $m(\angle A) =$

- 43) If two sides in the triangle are not equal in length , then the longest of them is opposite to an angle of measure.
- 44) If the measures of two angles are different , then the greatest in measure is opposite to a side of
- 45) The longest side in the right angled triangle is
- 46) The distance between a point and a given straight line is the length of
- 47) In the obtuse-angle triangle , the longest side is
- 48) In the isosceles triangle if $AB = AC$, $m(\angle A) = 70^\circ$, then $AB < \dots\dots\dots$
- 49) The longest side in the triangle ABC in which $m(\angle A) = 105^\circ$ is
- 50) The shortest side in $\triangle ABC$ in which $m(\angle A) = 40^\circ$ and $m(\angle B) = 60^\circ$ is
- 51) The longest side in $\triangle XYZ$ in which $m(\angle X) = m(\angle Y) + m(\angle Z)$ is
- 52) In $\triangle XYZ$ if $m(\angle X) > m(\angle Z)$ then $XY < \dots\dots\dots$
- 53) In $\triangle ABC$ if $AB > BC$, then $m(\angle A) < \dots\dots\dots$
- 54) In $\triangle ABC$ if $m(\angle A) = 67^\circ$ and $m(\angle B) = 33^\circ$, then $AB > \dots\dots\dots > \dots\dots\dots$

- 55) In any triangle the sum of lengths of any two sides is greater than
- 56) In $\triangle ABC$ it will be $AB + BC > \dots\dots\dots$
- 57) In $\triangle DEF$ it will be $EF < \dots\dots\dots + \dots\dots\dots$
- 58) In $\triangle ABC$ of $AB < BC < AC$, then the smallest angle in measure is
- 59) ABC is an isosceles triangle where $AB = 3$ cm and $BC = 7$ cm , then $AC = \dots\dots\dots$
- 60) An isosceles triangle in which the lengths of two of its sides are 4 cm and 8 cm , then the length of the third side equals.....
- 61) If two angles in a triangle are unequal in measure , then the greater angle is measure is opposite to and if the two lengths of two sides in a triangle unequal then the greater side in length is opposite to the angle which is
- 62) The smallest angle of a triangle (in measure) is opposite to
- 63) The longest side in the right-angled triangle is
- 64) The shortest distance between a given point and a given straight line is

- 65) ABC is a triangle in which : $m(\angle C) = 110^\circ$, then its longest side is
- 66) In $\triangle ABC$: if $m(\angle A) = 50^\circ$, $m(\angle B) = 30^\circ$, then the shortest side in the triangle is
- 67) In $\triangle ABC$: if $m(\angle A) = m(\angle B) + m(\angle C)$, then the longest side in the triangle is
- 68) The lengths of two sides in the triangle are not equal , then the greater side in length is opposite to
- 69) In $\triangle ABC$, $AB = 7$ cm , $BC = 5$ cm and $AC = 6$ cm , then the smallest angle in measure is
- 70) In $\triangle DEF$, if $DE > EF$, then $m(\angle F) > \dots\dots\dots$
- 71) In any triangle ABC , if $AB > AC > BC$, then
 $m(\angle \dots\dots\dots) < m(\angle \dots\dots\dots) < m(\angle \dots\dots\dots)$



Part (1)



الصف الثاني الإعدادي

(1) Complete:

1) $\sqrt[3]{r^3} =$

2) $\sqrt{16} = \sqrt[3]{\quad}$

3) $-\sqrt[3]{-1} - \sqrt{1} =$

4) $\frac{\sqrt[3]{-64}}{\sqrt{64}} =$

5) $-\sqrt[3]{64} + \dots = 5$

6) $\mathbb{Q} \cap \dot{\mathbb{Q}} =$

7) $\mathbb{Q} \cup \dot{\mathbb{Q}} = \dots$

8) $\mathbb{R}^+ \cap \mathbb{R}^- =$

9) $\mathbb{R} - \dot{\mathbb{Q}} = \dots$

10) $\mathbb{R} - \{0\} =$

11) $\mathbb{R} - \mathbb{Q} =$

12) The multiplicative neutral element in \mathbb{R} is _____ and the additive neutral in \mathbb{R} is _____

13) The additive inverse of the number $3 - \sqrt{5}$ is _____

14) The multiplicative inverse of the number $\frac{7}{\sqrt{7}}$ is $\frac{\quad}{\sqrt{7}}$

15) The conjugate number of the number $\frac{2}{\sqrt{3} - \sqrt{2}}$ is _____

16) If $x = 2 + \sqrt{5}$ and y is the conjugate number of x then $(x - y)^2 =$ _____

17) If $x = \sqrt{3} + 2$, $y = \sqrt{3} - 2$ then $(xy, x + y) =$ _____

18) $\sqrt[3]{2} \times 3\sqrt[3]{32} =$

19) $\sqrt[3]{54} + \sqrt[3]{16} - \sqrt[3]{250} =$

20) $\sqrt[3]{16} - \frac{1}{3}\sqrt[3]{54} + \sqrt[3]{-2} =$

21) $\sqrt[3]{\frac{2}{3}} \times \sqrt[3]{12} =$



22) If $x = 2$, $y = \sqrt[3]{-16}$, then $\left(\frac{x}{y}\right)^3 =$

23) $\frac{1}{2} \sqrt[3]{56} - \sqrt[3]{\frac{7}{27}} =$

24) $[3, 4] \cup [3, 4] =$

25) $]-3, 2] - [0, 2] =$

26) $[2, 7] -]2, 7[=$

27) $\frac{4}{\sqrt{5} + \sqrt{3}} + \frac{4}{\sqrt{5} - \sqrt{3}} =$

28) $\frac{\sqrt{6} - \sqrt{5}}{\sqrt{6} + \sqrt{5}} + \frac{\sqrt{6} + \sqrt{5}}{\sqrt{6} - \sqrt{5}} =$

29) $\quad \quad \quad < \sqrt{5} < \quad \quad \quad$

30) $\quad \quad \quad < \sqrt[3]{30} < \quad \quad \quad$

(2) Choose the correct answer:

1) $\sqrt[3]{\left(\frac{1}{8}\right)^2} =$

a) $\frac{1}{2}$

b) $\frac{1}{4}$

c) $\frac{1}{8}$

d) $\frac{1}{16}$

2) $\sqrt[3]{\frac{0.001}{8}} =$

a) $\frac{1}{2}$

b) 2

c) $\frac{1}{20}$

d) 20

3) $-\sqrt{25} = \sqrt[3]{y}$, then $y =$

a) 4

b) -4

c) 25

d) -125

4) If $\frac{x}{3} = \frac{9}{x^2}$, then $x =$

a) 1^3

b) 3

c) 9

d) 27



5) The irrational number in the following numbers is

a) $\sqrt[3]{4}$

b) $\sqrt[3]{8}$

c) $\sqrt[4]{9}$

d) $\sqrt{2}$

6) If $n \in \mathbb{Z}_+$, $n < \sqrt{26} < n + 1$ then $n =$

a) 15

b) 5

c) - 5

d) 24

7) The square whose area is 10 cm^2 its side length is _____ cm

a) 5

b) - 5

c) $\sqrt{10}$

d) $-\sqrt{10}$

8) $\sqrt[3]{24}$ 3 ($>$, $<$, $=$)

9) $\sqrt[3]{8}$ $\sqrt{4}$ ($>$, $<$, $=$)

10) $\sqrt[3]{3} - 1$ 0.2 ($>$, $<$, $=$)

11) $1 + \sqrt{3}$ $\sqrt{5}$ ($>$, $<$, $=$)

12) $\mathbb{R} =$ _____

a) $\mathbb{Q} \cup \mathbb{Q}$

b) $\mathbb{Z}_+ \cup \mathbb{Z}_-$

c) $\mathbb{R}_+ \cup \mathbb{R}_-$

d) $\mathbb{N} \cup \mathbb{R}_-$

13) If x is a negative number, then which of the following number is positive

a) x^2

b) x^3

c) $2x$

d) $\frac{x}{2}$

14) If $x \in \mathbb{R}^+$, $y \in \mathbb{R}^+$ and if $x^2 > y^2$ then

a) $x > y$

b) $x < y$

c) $x = y$

d) $x < y$

15) The s s of the equation $x^2 + 1 = 0$ in \mathbb{R} is

a) $\{-1\}$

b) $\{1, -1\}$

c) $\{1\}$

d) \emptyset

16) 3 $[3, 5]$ (\in , \notin)

17) $|-3|$ $[2, \infty[$ (\in , \notin)

18) 5 $]\sqrt{5}, \sqrt{23}[$ (\in , \notin)

19) $\sqrt[3]{-1}$ $]-\infty, 1[$ (\in , \notin)



20) The multiplicative inverse of the number $\sqrt{5} =$

a) -5

b) $\frac{-1}{5}$

c) $\frac{5}{\sqrt{5}}$

d) $\frac{\sqrt{5}}{5}$

21) The additive inverse of the number $\frac{6}{\sqrt{2}}$ is

a) $-2\sqrt{3}$

b) $2\sqrt{3}$

c) $-3\sqrt{2}$

d) $3\sqrt{2}$

22) $\sqrt[3]{\frac{2}{9}} =$

a) $\frac{\sqrt[3]{6}}{3}$

b) $\sqrt[3]{\frac{1}{6}}$

c) $\sqrt[3]{6}$

d) $\sqrt[3]{2}$

(3) Find the value of x in each of the following:

a) $\sqrt[3]{x} = \frac{-1}{4}$

b) $\sqrt[3]{x} - 3 = -1$

c) $x^3 + 5 = 32$

d) $\frac{1}{5}x^3 = -200$

e) $x < \sqrt[3]{-100} < x + 1$

f) $x < |-\sqrt{35}| < x + 1$

(4) Find the value of a , b

a) $\frac{3}{2\sqrt{2}-\sqrt{5}} = a\sqrt{2} + b\sqrt{5}$

b) $\frac{11}{2\sqrt{5}+3} = a\sqrt{5} + b$

(5) Write the conjugate of the numbers:

a) $\sqrt{5} + \sqrt{3}$

b) $5 - 2\sqrt{7}$



(6) If $x = \frac{2}{\sqrt{7}-\sqrt{5}}$, $y = \frac{2}{\sqrt{5}+\sqrt{7}}$ find $(x + y)^2$

(7) If $x = [2 , 5 [$ and $y = [-1 , 3 [$ find using the number line:

1) $x \cup y$

2) $x \cap y$

3) $x - y$

4) $y - x$

5) x^c

6) y^c

(8) A square of side length is 6 cm find its diagonal length.

(9) A rectangle with dimensions 5 cm , 7 cm, if the area equals the area of a square, then find the side length of the square and its diagonals length.

(10) Prove that $\sqrt{7}$ included between 2.6 and 2.7

(11) Find the s.s in \mathbb{Q} :

a) $x^2 = 13$

b) $\frac{2}{5} x^2 = \frac{25}{2}$

c) $(x^3 + 5) (x^2 - 3) = 0$

12) Represent $2\sqrt{3}$ on the number line



Part (2)

(1) Choose the correct answer:

1) $\mathbb{R} =$

- a) $\mathbb{R}_+ \cup \mathbb{R}_-$ b) $] -\infty, +\infty [$
c) $] -\infty, 0]$ d) $] 0, -\infty [$

2) If the volume of the sphere is $\frac{9}{16} \pi \text{ cm}^3$ then it's radius length

- a) $3\pi \text{ cm}$ b) 3 cm c) $\frac{4}{3} \text{ cm}$ d) $\frac{3}{4} \text{ cm}$

3) $\sqrt{8} - \sqrt{2} =$

- a) $\sqrt{2}$ b) 2 c) $\sqrt{6}$ d) 4

4) If the volume of the sphere is $\frac{32}{3} \pi \text{ cm}^3$, then it's diameter is of length equals ,

- a) 2 cm b) 4 cm c) 8 cm d) 32 cm

5) $[-3, 7[- \{-3, 7\} =$

- a) $[-3, 7[$ b) $] -3, 7]$ c) $] -3, 7 [$ d) $(0, 0)$

6) $\{8, 9, 10\} -]8, 10[= \dots \dots \dots$

- a) \emptyset b) $\{8, 10\}$ c) $\{9\}$ d) \mathbb{N}

7) The volume of a cube is 125 cm^3 , then its total area equals

- a) 25 cm^2 b) 50 cm^2 c) 125 cm^2 d) 150 cm^2

8) $] -3, 5[\cap] 0, 3[=$

- a) $[0, 3]$ b) $[0, 3[$ c) $] -3, 0[$ d) $[3, 5[$



9) $\frac{1}{2} \sqrt{20} + 10 \sqrt{\frac{1}{5}} =$

- a) $3\sqrt{5}$ b) $4\sqrt{5}$ c) 5 d) 12

10) The volume of a right circular cylinder is $90\pi \text{ cm}^3$ and its height is 10 cm then the radius length of its base equals

- a) 3 cm b) 4.5 cm c) 5 d) 9 cm

11) If $x = \sqrt{7} + \sqrt{3}$ and $y = \sqrt{7} - \sqrt{3}$ then $xy =$

- a) 4 b) 10 c) 40 d) 58

12) The edge length of a cube is 4 cm then its volume is

- a) 16 cm^3 b) 24 cm^3 c) 64 cm^3 d) 96 cm^3

13) The volume of a cube is 64 cm^3 then its edge length is

- a) 32 b) 16 cm c) 8 cm d) 4 cm

14) The circumference of a circle is 44 cm then its diameter length is ($\pi = \frac{22}{7}$)

- a) 14 cm b) 22 cm c) 44 cm d) 154 cm

15) The multiplicative inverse of the number $\sqrt{5}$ is

- a) $-\sqrt{5}$ b) $\frac{-1}{\sqrt{5}}$ c) $\frac{\sqrt{5}}{5}$ d) $\frac{5}{\sqrt{5}}$

16) $[-3, 4] \cap [2, 6] =$

- a) $[-3, 2]$ b) $[-3, 6]$ c) $[2, 4]$ d) $]2, 6[$

17) If the radius length of a sphere is 3 cm, then its volume is

- a) $4\pi \text{ cm}^3$ b) $9\pi \text{ cm}^3$ c) $27\pi \text{ cm}^3$ d) $36\pi \text{ cm}^3$

18) $[-3, 2] - \{-3, 6\} =$

- a) $] -3, 6[$ b) $] -3, 2[$ c) $] -3, 2]$ d) \emptyset



19) The s.s of the nequa. ty $-1 < x + 3 < 3$ n \mathbb{R} is

- a) $[-4, 0]$ b) $[2, 6]$ c) $] -4, 0[$ d) $] 2, 6[$

20) $\frac{1}{2} \sqrt{48} = 2 \times$

- a) $\sqrt{3}$ b) $\sqrt{12}$ c) $\sqrt{96}$ d) 192

21) The expression $\frac{\sqrt{25-9}}{\sqrt{25}-\sqrt{9}} =$

- a) -1 b) 1 c) 2 d) 3

22) The s.s of the .n equality $3 < x + 2 < 5$ in \mathbb{R} equals

- a) $[1, 3[$ b) $] 1, 3]$ c) $[1, 3]$ d) $] 1, 3[$

23) If the volume of a sphere equals $36\pi \text{ cm}^3$ then its radius length is

- a) $\sqrt[3]{3} \text{ cm}$ b) $\sqrt{3} \text{ cm}$ c) 3 cm d) 9 cm

24) The s.s of the nequa. ty $-2x > 6$ n \mathbb{R} is

- a) $] -\infty, -3[$ b) $] -\infty, -3]$ c) $[-3, +\infty[$ d) $] -3, +\infty[$

(2) Complete the following:

1) $[2, 5] - \{2, 5\} =$

2) if $-x < 2$ then $x \in$

3) $\{-1, 0, 1\} \cap]-1, 1[=$

4) $] -\infty, 1] \cap [-4, \infty[=$

5) If $\sqrt{x} = \sqrt{2} + 1$ then $x =$

6) $[2, 5] \cap [2, 5[=$

7) $\sqrt[3]{64} = \sqrt{\dots}$

8) The multiplicative inverse of the number $\frac{3}{\sqrt{3}}$ is $\sqrt{3}$

9) The s.s of the inequal ty $-x + 1 < 0$ in \mathbb{R} is



- 10) If $x = \sqrt[3]{3} + 1$ and $y = \sqrt[3]{3} - 1$ then $(x + y)^3 =$
- 11) $[2, \infty[- [4, \infty[=$
- 12) If the side length of a square is L cm and its area is 30 cm^2 , then the area of the square whose side length equals $2L$ cm is
- 13) The slope of the straight line which passes through $(-3, -1)$ and $(2, 5)$ equals
- 14) The sum of lengths of all edges of a cube is 36 cm then its total area equals cm^2 .
- 15) The relation $y = 3x + 4$, and $x = 1$, then $y =$

(3) Answer the following questions:

- 1) Reduce to the simplest form $\sqrt{75} - \sqrt[3]{125} + \frac{10}{\sqrt{3}-1}$
- 2) A right circular cylinder, whose height equals the radius length of its base and its volume equals $27\pi \text{ cm}^3$ calculate its lateral surface area
- 3) Solve in \mathbb{R} the inequality $5 - 2x < 9$ then represent the solution set on the number line
- 4) Find the s.s of the inequality $3x < 2x + 4$ in \mathbb{R} and represent the interval of solution on the number line
- 5) If $x = \sqrt{3} - 1$ and $y = \frac{1}{\sqrt{3}-\sqrt{2}}$ find the value of $x \times y$
- 6) The area of one face of a cube is 36 cm^2 find the length of its edge, and its volume.
- 7) Find the s.s of the inequality $1 < x + 1 < 4$ in \mathbb{R} then represent the interval of solution on the number line



- 8) Reduce to the simplest form $2\sqrt{5}(\sqrt{5}-2) + \sqrt{20} + 10\sqrt{\frac{1}{5}}$
- 9) Find the value of $\sqrt{75} - 2\sqrt{27} + 3\sqrt{\frac{1}{3}}$
- 10) Find the s.s of the inequality $5 < 3 - x < 7$ in \mathbb{R} and represent the interval of solution on the number line
- 11) If $x = \sqrt{7} + 3$ and $y = \sqrt{7} - 3$ then find the value of $\left(\frac{x+y}{xy}\right)^2$
- 12) Find the s.s of the inequality $3 < x + 2 < 6$ in \mathbb{R}
- 13) Write the form of an interval the s.s of the inequality $-1 < 5 - 2x < 7$ in \mathbb{R} then represent the solution on the number line
- 14) If $x = \sqrt{5} + \sqrt{2}$ then prove that $\frac{6}{x} + 2x = 4\sqrt{5}$
- 15) Find the total area of a right circular cylinder of radius of its base is $\frac{7}{\sqrt{2}}$ cm and its height is $10\sqrt{2}$ cm ($\pi = \frac{22}{7}$)
- 16) If $x = 2\sqrt{2} - \sqrt{3}$ and $y = \frac{5}{2\sqrt{2} - \sqrt{3}}$, then prove that x and y are two conjugate numbers
- 17) Reduce to the simplest form $\sqrt[3]{16} - \frac{1}{3}\sqrt[3]{54} + \sqrt[3]{2}$
- 18) If $x = \frac{5}{\sqrt{5} - \sqrt{2}}$ and $y = \frac{5}{\sqrt{5} + \sqrt{2}}$, then find the value of $x^2 y^2$
- 19) If $a = \sqrt{2} + 1$ and $b = \frac{1}{1 + \sqrt{2}}$ then find the value of $(a - b)^2$
- 20) A metallic sphere of radius length 6 cm is melted and its material has been converted into a right circular cylinder its base radius is of length 6 cm calculate the height of the cylinder
- 21) If $(a, 2a)$ satisfies $y = x - 1$ then find the value of a
- 22) Represent the relation $y = x + 2$ graphically



Statistics

(1) Choose the correct answer from those given:

- 1) The order of the median of the set of values 4, 5, 6, 7, 8 is
a) third b) fourth c) fifth d) sixth
- 2) If the order of the median of a set of values is the fourth then the number of these values is
a) 3 b) 5 c) 7 d) 9
- 3) If the order of the median of the set of values is the fifth, then the number of these values equals ,
a) 5 b) 6 c) 9 d) 10
- 4) The median of the set of the values 15, 22, 9, 11, 33 is
a) 9 b) 15 c) 18 d) 90
- 5) The median of the set of values 34, 23, 25, 40, 22, 4 is
a) 22 b) 23 c) 24 d) 25
- 6) The median of the set of the values 3, 6, 6, 7, 9, 11, 13, 14, 15, 20 is .
a) 9 b) 10 c) 11 d) 20
- 7) If the median of the set of the values 27, 45, 19, 24, 28 is x then x =
a) 24 b) 27 c) 28 d) 45
- 8) If the median of the set of the values $k + 1$, $k + 2$, $k + 5$, $k + 3$, $k + 3$ where k is (a positive number) is 13 then k =
a) 2 b) 5 c) 10 d) 13



- 9) The arithmetic mean of the values 19, 32, 27, 6, 6 is
 a) 90 b) 32 c) 18 d) 6
- 10) If the arithmetic mean of the values 27, 8, 16, 24, 6, k is 14 then
 k =
 a) 9 b) 6 c) 27 d) 84
- 11) If the arithmetic mean of the values 18, 23, 29, $2k - 1$, k is 18
 then k =
 a) 6 b) 7 c) 29 d) 90
- 12) The arithmetic mean of the values $3 - a$, 5, 1, 4, $2 + a$ equals
 a) 5 b) 2 c) 3 d) 15
- 13) If the arithmetic mean of 6 values is 12, then the sum of these
 values equals
 a) 12 b) 6 c) 18 d) 72
- 14) The set which its lowest boundary is 2 and its upper boundary is
 6 then its centre is
 a) 3 b) 6 c) 4 d) 8
- 15) The set which its lower limit is 5 and its upper limit is 7, then its
 centre is
 a) 9 b) 6 c) 4 d) 5

(2) Find the arithmetic mean of the following frequency distribution:

| Sets | 1- | 3- | 5- | 7- | 9- | Total |
|-----------|----|----|----|----|----|-------|
| Frequency | 4 | 6 | 8 | 7 | 5 | 30 |



(3) Find the arithmetic mean of the following frequency distribution:

| Sets | 5- | 15- | 25- | 35- | 45- | Total |
|-----------|----|-----|-----|-----|-----|-------|
| Frequency | 3 | 10 | 12 | 10 | 5 | 40 |

(4) Find by using the following frequency distribution

| Sets | 0- | 2- | 4- | 6- | k- | Total |
|-----------|----|----|----|----|----|-------|
| Frequency | m | 5 | 8 | 7 | 2 | 25 |

- a) The value of k and m
- b) The median using the ascending cumulative curve
- c) The arithmetic mean
- d) The mode



Part (1) Answers

(1) Complete

- | | | |
|---------------------|------------------------------|------------------------------|
| 1) C | 2) 64 | 3) Zero |
| 4) $-\frac{1}{2}$ | 5) 1 | 6) \emptyset |
| 7) R | 8) \emptyset | 9) \mathbb{Q} |
| 10) $R - \{0\}$ | 11) \mathbb{Q} | 12) 1, zero |
| 13) $-3 + \sqrt{5}$ | 14) 1 | 15) $2(\sqrt{3} + \sqrt{2})$ |
| 16) Zero | 17) $(-1, 2\sqrt{3})$ | 18) 12 |
| 19) $10\sqrt[3]{2}$ | 20) Zero | 21) 2 |
| 22) $-\frac{1}{2}$ | 23) $\frac{2}{3}\sqrt[3]{7}$ | 24) $[3, 4]$ |
| 25) $] -3, 0 [$ | 26) $\{2, 7\}$ | 27) $4\sqrt{5}$ |
| 28) 22 | 29) 2, 3 | 30) 3, 4 |

(2) Choose

- | | | |
|-----------------------------|--------------------------|----------------------------------|
| 1) $\frac{1}{4}$ | 2) $\frac{1}{20}$ | 3) -125 |
| 4) 3 | 5) $\sqrt{2}$ | 6) 5 |
| 7) $\sqrt{10}$ | 8) $<$ | 9) $=$ |
| 10) $>$ | 11) $>$ | 12) $\mathbb{Q} \cup \mathbb{Q}$ |
| 13) X^2 | 14) $X > Y$ | 15) \emptyset |
| 16) \in | 17) \in | 18) \notin |
| 19) \in | 20) $\frac{\sqrt{5}}{5}$ | 21) $-3\sqrt{2}$ |
| 22) $\frac{\sqrt[3]{6}}{3}$ | | |



- (3) a) $-\frac{1}{64}$ b) 8 c) 3
d) -10 e) -5 f) 5

- (4) a) $a = 3$, $b = 1$
b) $a = 2$, $b = 3$

- (5) a) $\sqrt{5} - \sqrt{3}$ b) $5 + 2\sqrt{7}$

$$(6) \quad X = \frac{2}{\sqrt{7} - \sqrt{5}} \times \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} + \sqrt{5}} = \sqrt{7} + \sqrt{5}$$

$$Y = \frac{2}{\sqrt{5} + \sqrt{7}} \times \frac{\sqrt{5} - \sqrt{7}}{\sqrt{5} - \sqrt{7}} = \sqrt{7} - \sqrt{5}$$

$$\begin{aligned} (X + Y) 2 &= (\sqrt{7} + \sqrt{5} + \sqrt{7} - \sqrt{5}) 2 \\ &= (2\sqrt{7}) 2 \\ &= (4 \times 7) \\ &= 28 \end{aligned}$$

(7)



- 1) $[-1, 5[$
- 2) $[2, 3[$
- 3) $[3, 5[$
- 4) $[-1, 2[$
- 5) $] -\infty, 2[\cup [5, \infty[$
- 6) $] -\infty, -1[\cup [3, \infty[$



(8) A of square = $6 \times 6 = 36 \text{ cm}^2$

$$d = \sqrt{2A} = \sqrt{2 \times 36} = \sqrt{72} = 8.5 \text{ cm}$$

(9) A of Rectangle = $5 \times 7 = 35 \text{ cm}^2$

A of Square = 35 cm^2

$$d = \sqrt{2A} = \sqrt{2 \times 35} = \sqrt{70} = 8.4 \text{ cm}$$

the side length of the square = $\sqrt{A} = \sqrt{35} = 5.9 \text{ cm}$

(10) $\sqrt{7} \sim 2.65$

$$2.6 < 2.65 < 2.7$$

(11) a) $X = \pm \sqrt{13}$ $SS = \{ \pm \sqrt{13} \}$

b, $X = \pm \sqrt{\frac{15}{4} X^5} = \pm \sqrt{\frac{15}{4}} = \pm \frac{\sqrt{15}}{2}$ $SS = \{ \pm \frac{\sqrt{15}}{2} \}$

c) $X^3 + 5 = 0$ or $X^2 - 3 = 0$

$$X^3 = -5$$

$$X^2 = 3$$

$$X = \sqrt[3]{-5}$$

$$X = \pm \sqrt{3}$$

$$SS = \{ \sqrt[3]{-5}, \pm \sqrt{3} \}$$

(12) The length of the hypotenuse = $\frac{3+1}{2} = 2 \text{ cm}$

The length of the side = $\frac{3-1}{2} = 1 \text{ cm}$





Part (2) Answers

(1) Choose

1) $] -\infty, \infty [$

2) $r = \frac{3}{4}$

3) $\sqrt{2}$

4) $2 \times 2 = 4 \text{ cm}$

5) $] -3, 7 [$

6) $\{8, 10\}$

7) $T.A. = 5 \times 5 \times 6 = 150 \text{ cm}^2$

8) $[0, 3 [$

9) $3\sqrt{5}$

10) $\sqrt{\frac{90\pi}{10\pi}} = 3 \text{ cm}$

11) $7 - 3 = 4$

12) $v = 4^3 = 64 \text{ cm}^3$

13) $E = \sqrt[3]{64} = 4 \text{ cm}$

14) $d = \frac{c}{\pi} = 14 \text{ cm}$

15) $\frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5}$

16) $[2, 4]$

17) $v = \frac{4}{3} \times \pi \times 3^3 = 36\pi$

18) $] -3, 2]$

19) $] -4, 0]$

20) $\sqrt{3}$

21) $\frac{4}{5-3} = 2$

22) $[1, 3 [$

23) $r = 3 \sqrt{\frac{v}{4\pi}} = 3 \text{ cm}$

24) $] -\infty, -3]$

(2) Complete:

1) $]2, 5 [$

2) $x > -2$ then $x \in]-2, \infty [$

3) $\{0\}$

4) $[-4, 1]$

5) $x = (\sqrt{2} + 1)^2 = 5$

6) \emptyset

7) $\sqrt[3]{64} = 4 = \sqrt{16}$

8) $\frac{\sqrt{3}}{3} = \frac{1}{\sqrt{3}}$

9) $x > 1$ $S = [1, \infty [$

10) $(2\sqrt[3]{3})^3 = 8 \times 3 = 24$

11) $[2, 4 [$

12) $A = S^2 = 4 L^2 = 4 \times 30 = 120 \text{ cm}^2$



$$13) m = \frac{5}{2} - \frac{1}{3} - \frac{4}{5}$$

$$14) E = \frac{36}{12} = 3 \text{ cm}, \quad T.A = 3 \times 3 \times 6 = 54 \text{ cm}^2$$

$$15) y = 3 \times 1 + 4 = 7$$

(3)

$$1) 5\sqrt{3} - 5 + 5 + 5\sqrt{3} = 10\sqrt{3}$$

$$2) \quad h = r, \quad v = \pi r^2 h = \pi r^3$$

$$r = \sqrt[3]{\frac{v}{\pi}} = \sqrt[3]{\frac{27\pi}{\pi}} = 3 \text{ cm}$$

$$L.S.A = 2\pi r h = 2 \times \pi \times 3 \times 3 = 18\pi$$

$$3) -2x < 4 \quad x > -2 \quad S.S =] -2, \infty [$$

$$4) 3x - 2x < 4 \quad x < 4 \quad S.S =] -\infty, 4 [$$

$$5) y = \frac{1}{\sqrt{3}-\sqrt{2}} \times \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} = +(\sqrt{3}+\sqrt{2})$$

$$xy = +(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2}) \quad 3 - 2 = 1$$

$$6) E = \sqrt{36} = 6 \text{ cm}, \quad v = 6^3 = 216 \text{ cm}^3$$

$$7) 0 < x < 3 \quad S.S =] 0, 3 [$$



$$8) 10 - 4\sqrt{5} + 2\sqrt{5} + 2\sqrt{5} = 10$$

9) zero

$$10) 2 < -x < 4$$

$$-2 > x > 4 \quad S.S =] -2, 4 [$$

$$11) \left(\frac{x+y}{xy} \right)^2 = \left(\frac{2\sqrt{7}}{7-9} \right)^2 = (-\sqrt{7})^2 = 7$$



12) $1 < x < 4$ $ss = [1, 4]$

13) $-6 < -2 < 2$, $3 > x > -1$ $ss =]-1, 3[$

14) $\frac{6}{\sqrt{5} + \sqrt{2}} + 2\sqrt{5} + 2\sqrt{2} = 2(\sqrt{5} - \sqrt{2}) + 2\sqrt{5} + 2\sqrt{2}$
 $= 2\sqrt{5} - 2\sqrt{2} + 2\sqrt{5} + 2\sqrt{2} = 4\sqrt{5}$

15) $T A = 2\pi rh = 2 \times \frac{22}{7} \times \frac{7}{\sqrt{2}} \times 10\sqrt{2} = 440 \text{ cm}^2$

16) $y = \frac{5}{2\sqrt{2}-\sqrt{3}} \times \frac{2\sqrt{2}+\sqrt{3}}{2\sqrt{2}+\sqrt{3}} = \frac{5(2\sqrt{2}+\sqrt{3})}{8-3} = 2\sqrt{2} + \sqrt{3}$
 so , y is the conjugate of x

17) $2\sqrt[3]{2} - \sqrt[3]{2} - \sqrt[3]{2} = \text{zero}$

18) $x = \sqrt{7} + \sqrt{2} , y = \sqrt{7} - \sqrt{2}$
 $x^2y^2 = (xy)^2 = (7 - 2)^2 = 25$

19) $b = -(1 - \sqrt{2}) = \sqrt{2} - 1$
 $(a - b)^2 = 2^2 = 4$

20) $V_{\text{sphere}} = V_{\text{cylinder}}$
 $\frac{4}{3}\pi \times 6^3 = \pi \times 6^2 \times h$

$h = \frac{6^3 \times \frac{4}{3}}{6^2} = 8 \text{ cm}$

21) $2a = a - 1$
 $a = -1$

22,

| | | | | |
|---|----|---|---|---|
| x | -1 | 0 | 1 | 2 |
| y | 1 | 2 | 3 | 4 |

Represent by yourself



Statistics

(1) Choose:

1) 13

2) 9

3) 9

4) 15

5) $\frac{23+25}{2} = 24$

6) $\frac{10+11}{2} = 10$

7) 27

8) $k + 3 = 13 \rightarrow k = 10$

9) $\frac{19+32+27+6+6}{5} = 18$

10) $\frac{27+8+16+24+k+14}{7} = 14 \rightarrow k = 7 \times 14 - 89 = 9$

11) $\frac{18+23+20+2k+1+k}{5} = \frac{60+3k}{5} \quad 18 \rightarrow k = \frac{5 \times 18 - 60}{3} = 7$

12) $\frac{3-1+5+1+4+2+x}{5} = 3$

13) $6 \times 12 = 72$

14) $\frac{2+6}{2} = 4$

15) $\frac{5+7}{2} = 6$

(2)

| Sets | Center | Freq. | Center x freq. |
|--------------|--------|-----------|----------------|
| 1- | 2 | 4 | 8 |
| 3- | 4 | 6 | 24 |
| 5- | 6 | 8 | 48 |
| 7- | 8 | 7 | 56 |
| 9- | 10 | 5 | 50 |
| Total | | 30 | 186 |

Mean = $\frac{186}{30} = 6.2$



(3) Mean = $\frac{1240}{40} = 31$ " make table by yourself "

(4) a) k = 8 , m = 25 - (5 + 8 + 7 + 2) = 3

b) Mean = $\frac{125}{25} = 5$ (draw the mean table)

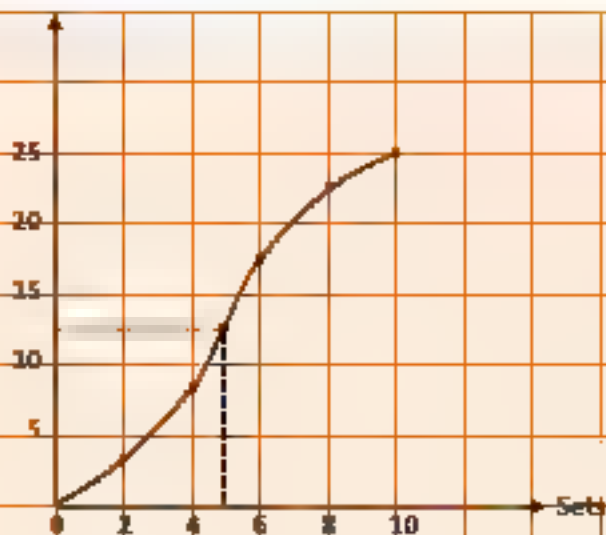
c)

| The upper limit | Ascending cumulative freq. |
|-----------------|----------------------------|
| less than 0 | 0 |
| less than 2 | 3 |
| less than 4 | 8 |
| less than 6 | 16 |
| less than 8 | 23 |
| less than 10 | 25 |

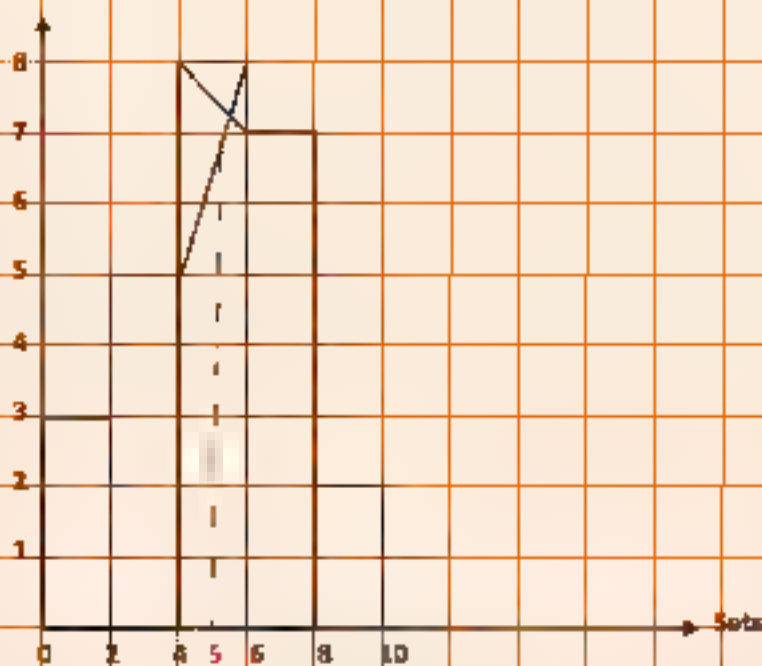
The order of median = $\frac{25}{2} = 12.5$

Median ~ 5

Mode ~ 5



Ascending Cumulative



Histogram



Question

(1) Choose the correct answer:

1) $\mathbb{R} = \dots\dots\dots$

- a) $\mathbb{R}_+ \cup \mathbb{R}_-$ b) $] -\infty, +\infty[$ c) $] -\infty, 0]$ d) $] 0, +\infty[$

2) The opposite figure represents the interval

- a) $[-3, 5]$ b) $] -3, 5[$
c) $[-3, 5[$ d) $] -3, 5]$



3) If the volume of the sphere is $\frac{9}{16}\pi \text{ cm}^3$ then its radius length

- a) $3\pi \text{ cm}$ b) 3 cm c) $\frac{4}{3} \text{ cm}$ d) $\frac{3}{4} \text{ cm}$

4) $\sqrt{8} - \sqrt{2} = \dots\dots\dots$

- a) $\sqrt{2}$ b) 2 c) $\sqrt{6}$ d) 4

5) If the volume of the sphere is $\frac{32}{3}\pi \text{ cm}^3$ then its diameter is of length equals

- a) 2 cm b) 4 cm c) 8 cm d) 32 cm

6) $[-3, 7] - \{-3, 7\} = \dots\dots\dots$

- a) $[-3, 7[$ b) $] -3, 7]$ c) $] -3, 7[$ d) $(0, 0)$

7) $\{8, 9, 10\} -]8, 10[= \dots\dots\dots$

- a) \emptyset b) $\{8, 10\}$ c) $\{9\}$ d) \mathbb{N}

8) The volume of a cube is 125 cm^3 , then its total area equals

- a) 25 cm^2 b) 50 cm^2 c) 125 cm^2 d) 150 cm^2

9) $] -3, 5[\cap] 0, 3[= \dots\dots\dots$

- a) $[0, 3]$ b) $[0, 3[$ c) $] -3, 0[$ d) $[3, 5[$



10) $\frac{1}{2}\sqrt{20} + 10\sqrt{\frac{1}{5}} = \dots\dots\dots$

- a) $3\sqrt{5}$ b) $4\sqrt{5}$ c) 5 d) 12

11) The volume of a right circular cylinder is $90\pi\text{ cm}^3$ and its height is 10 cm then the radius length of its base equals

- a) 3 cm b) 4.5 cm c) 5 cm d) 9 cm

12) If $x = \sqrt{7} + \sqrt{3}$ and $y = \sqrt{7} - \sqrt{3}$ then $xy = \dots\dots\dots$

- a) 4 b) 10 c) 40 d) 58

13) The edge length of a cube is 4 cm, then its volume is

- a) 16 cm^3 b) 24 cm^3 c) 64 cm^3 d) 96 cm^3

14) The volume of a cube is 64 cm^3 , then its edge length is

- a) 32 cm b) 16 cm c) 8 cm d) 4 cm

15) The circumference of a circle is 44 cm then its diameter length is ($\pi = \frac{22}{7}$)

- a) 14 cm b) 22 cm c) 44 cm d) 154 cm

16) The multiplicative inverse of the number $\sqrt{5}$ is

- a) $-\sqrt{5}$ b) $\frac{-1}{\sqrt{5}}$ c) $\frac{\sqrt{5}}{5}$ d) $\frac{5}{\sqrt{5}}$

17) $[-3, 4] \cap [2, 6] = \dots\dots\dots$

- a) $[-3, 2]$ b) $[-3, 6]$ c) $[2, 4]$ d) $]2, 6[$

18) If the radius length of a sphere is 3 cm, then its volume is ..

- a) $4\pi\text{ cm}^3$ b) $9\pi\text{ cm}^3$ c) $27\pi\text{ cm}^3$ d) $36\pi\text{ cm}^3$

19) $[-3, 6] - \{-3, 6\} = \dots\dots\dots$

- a) $] -3, 6[$ b) $] -3, 2[$ c) $] -3, 2]$ d) \emptyset

20) The S S of the inequality $-1 < x + 3 < 3$ in \mathbb{R} is

- a) $[-4, 0]$ b) $[2, 6]$ c) $] -4, 0[$ d) $]2, 6[$



21) $\frac{1}{2}\sqrt{48} = 2 \times \dots\dots\dots$

a) $\sqrt{3}$

b) $\sqrt{12}$

c) $\sqrt{96}$

d) 192

22) The expression $\frac{\sqrt{25-9}}{\sqrt{25}-\sqrt{9}} = \dots\dots\dots$

a) -1

b) 1

c) 2

d) 3

23) The S.S of the inequality $3 \leq x + 2 < 5$ in \mathbb{R} equals $\dots\dots\dots$

a) $[1, 3[$

b) $]1, 3]$

c) $[1, 3]$

d) $]1, 3[$

24) If the volume of a sphere equals $36\pi \text{ cm}^3$, then its radius length is $\dots\dots\dots$

a) $\sqrt[3]{3} \text{ cm}$

b) $\sqrt{3} \text{ cm}$

c) 3 cm

d) 9 cm

25) The S.S of the inequality $-2x \geq 6$ in \mathbb{R} is $\dots\dots\dots$

a) $] -\infty, -3[$

b) $] -\infty, -3]$

c) $[-3, +\infty[$

d) $] -3, +\infty[$

(2) Complete the following:

1) $[2, 5] - \{2, 5\} = \dots\dots\dots$

2) If $-x < 2$ then $x \in \dots\dots\dots$

3) $\{-1, 0, 1\} \cap]-1, 1[= \dots\dots\dots$

4) $] -\infty, 1] \cap [-4, \infty[= \dots\dots\dots$

5) If $\sqrt{x} = \sqrt{2} + 1$ then $x = \dots\dots\dots$

6) $]2, 5] \cap [2, 5[= \dots\dots\dots$

7) $\sqrt[3]{64} = \sqrt{\dots\dots\dots}$

8) The multiplicative inverse of the number $\frac{3}{\sqrt{3}}$ is $\frac{\dots\dots\dots}{\sqrt{3}}$

9) The S S of the inequality $-x + 1 \leq 0$ in \mathbb{R} is $\dots\dots\dots$

10) If $x = \sqrt[3]{3} + 1$ and $y = \sqrt[3]{3} - 1$ then $(x + y)^3 = \dots\dots\dots$

11) $[2, \infty[- [4, \infty[= \dots\dots\dots$



Model Answers

(1) Choose

- | | | |
|-------|-------|-------|
| 1) b | 2) c | 3) c |
| 4) a | 5) b | 6) b |
| 7) b | 8) d | 9) b |
| 10) a | 11) a | 12) a |
| 13) c | 14) d | 15) a |
| 16) c | 17) c | 18) d |
| 19) a | 20) c | 21) a |
| 22) c | 23) a | 24) c |
| 25) b | | |

(2) complete

- | | | |
|----------------|-------------------------|-------------------|
| 1) $] 2, 5[$ | 2) $] -2, \infty [$ | 3) $\{0\}$ |
| 4) $[-4, 1]$ | 5) $3 + 2\sqrt{2}$ | 6) $] 2, 5[$ |
| 7) $\sqrt{16}$ | 8) $\frac{1}{\sqrt{3}}$ | 9) $[1, \infty [$ |

$$10) (\sqrt[3]{3} + 1 + \sqrt[3]{3} - 1)^3 = (2\sqrt[3]{3})^3 = 8 \times 3 = 24$$

$$11) [2, 4[\qquad 12) L = \sqrt{30}, 2L = 2\sqrt{30}$$

$$\begin{aligned} A &= (2L)^2 = (2\sqrt{30})^2 \\ &= 4 \times 30 = 120 \text{ cm}^2 \end{aligned}$$

$$13) E = \frac{\text{Sum of edges}}{12} = \frac{36}{12} = 3 \text{ cm}$$

$$\text{Face area} = 3 \times 3 = 9 \text{ cm}^2$$

$$\text{Total area} = 9 \times 6 = 54 \text{ cm}^2$$



d) XYZ is an isosceles triangle where $XY = XZ$ if $m(\angle X) = 80^\circ$

then $m(\angle Y) = \dots\dots\dots$

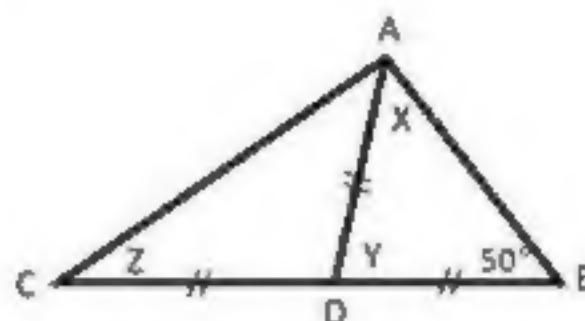
e) In $\triangle ABC$ if $\overline{AB} \perp \overline{BC}$ and $AB = BC$ then $m(\angle A) = \dots\dots\dots$

(9) In the opposite figure:

a) $X = \dots\dots\dots$

b) $Y = \dots\dots\dots$

c) $Z = \dots\dots\dots$



(10) Complete using data registered on each figure:



Fig. (1) $m(\angle C) = \dots\dots\dots$



Fig. (2) $m(\angle A) = \dots\dots\dots$

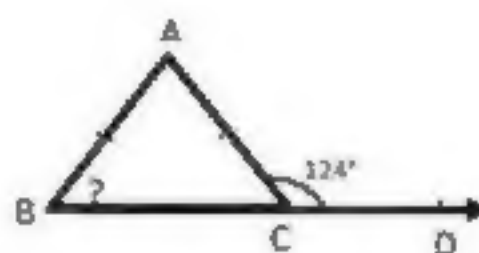


Fig. (3) $m(\angle B) = \dots\dots\dots$

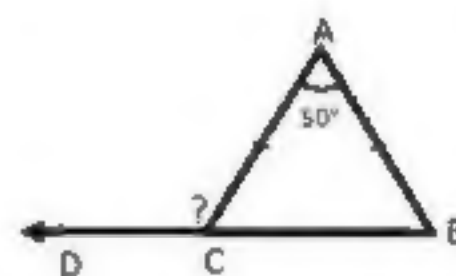


Fig. (4) $m(\angle D) = \dots\dots\dots$

Second: Choose the correct answer from those given:

1. If M is the point of intersection of the medians of $\triangle ABC$ and D is the midpoint of \overline{BC} , then $AD = \dots\dots\dots$

- a) $2 AM$ b) $\frac{2}{3} MD$ c) $\frac{3}{2} AM$ d) $4 MD$

2. The point of intersection of the medians of the triangle divides each of them with the ratio $\dots\dots\dots$ from the vertex.

- a) $2 : 1$ b) $1 : 2$ c) $3 : 1$ d) $3 : 2$



3. If M is the point of intersections of the medians of the triangle in $\triangle ABC$ and \overline{AX} is a median of length 6 cm, then AM equals
- a) 1 b) 2 cm c) 3 cm d) 4 cm
4. ABCD is a rectangle M is the point of intersection of its diagonals. If the length of the diagonal is 6 cm, then the length of the median \overline{AM} equals
- a) 2 cm b) 3 cm c) 6 cm d) 12 cm
5. The measure of the exterior angle of the equilateral triangle equals
- a) 30° b) 60° c) 90° d) 120°
6. If the measure of the vertex angle of the isosceles triangle equals 50° , then the measure of each angle of its base equal
- a) 40° b) 65° c) 70° d) 130°
7. If the measure of one of the two base angles of the isosceles triangle equals 40° , then the measure of the vertex angle is
- a) 40° b) 50° c) 80° d) 100°
8. The base angles of the isosceles triangle are
- a) complementary b) supplementary
c) congruent d) straight angles
9. If $XA = XB$ and $YA = YB$ then \overline{XY} \overline{AB}
- a) $//$ b) \perp c) $=$ d) \equiv
10. If A lies on the axis of symmetry of \overline{XY} then \overline{AX} \overline{AY}
- a) $//$ b) \perp c) $=$ d) \equiv
11. The quadrilateral ABCD in which \overline{BD} is an axis of symmetry of \overline{AC} may be
- a) a rhombus b) a rectangle
c) a parallelogram d) a trapezium



12. If $AX = AY$ and $BX = BY$ where X and Y are at different sides of \overline{AB} then \overline{XY} \overline{AB}

a) \parallel

b) \perp

c) $=$

d) \equiv

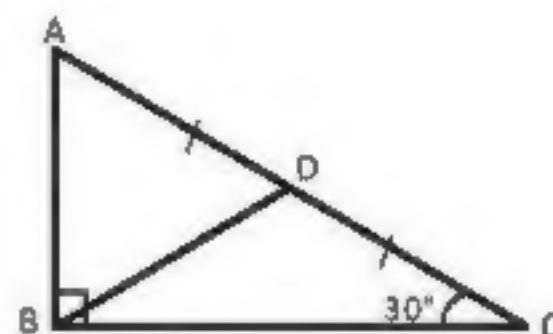
Third: Questions for getting the answer:

(1) In the opposite figure:

$m(\angle ABC) = 90^\circ$, D is the midpoint of \overline{AC} ,

$m(\angle C) = 30^\circ$

Prove that: $\triangle ABD$ is equilateral



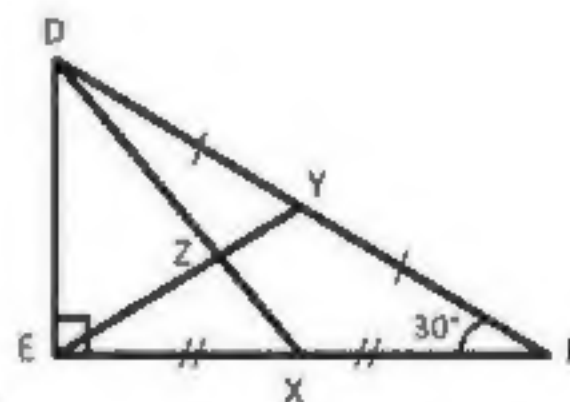
(2) In the opposite figure:

$m(\angle DEF) = 90^\circ$,

X and Y are the midpoints of \overline{EF} , \overline{DF}

respectively, $m(\angle F) = 30^\circ$

$DF = 12$, $XZ = 2.5$ find the perimeter of $\triangle DEZ$



(3) In the opposite figure:

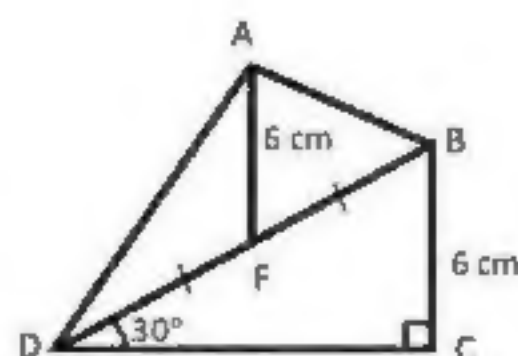
$m(\angle C) = 90^\circ$, \overline{AF} is a median of $\triangle ABD$

, $m(\angle BDC) = 30^\circ$

$BC = AF = 6$ cm

First: Find the length of \overline{BD}

Second: Prove that $m(\angle BAD) = 90^\circ$





Second: Choose the correct answer from those given:

- | | | | |
|---------------------|---------------|----------------|--------------|
| 1) $\frac{3}{2}$ AM | 2) 2 : 1 | 3) 4 cm | 4) 3 cm |
| 5) 120° | 6) 65° | 7) 100° | 8) congruent |
| 9) \perp | 10) \equiv | 11) rhombus | 12) \perp |

Third:

(1) Proof: \because In $\triangle ABC$

$m(\angle C) = 30^\circ$, $m(\angle ABC) = 90^\circ$, D is the midpoint of \overline{AC}

$\therefore \overline{BD}$ is a median

$$\therefore BD = \frac{1}{2} AC \quad (1)$$

$$\therefore AB = \frac{1}{2} AC \quad (2)$$

$$\therefore AB = BD = AD$$

$\therefore \triangle ABD$ is equilateral

(2) Proof: \because In $\triangle DEF$

X is midpoint of \overline{EF}

$\therefore \overline{DX}$ is a median, $XZ = 2.5$

$$\therefore DZ = 2 ZX = 5 \text{ cm} \quad (1)$$

Y is midpoint of \overline{FD}

$\therefore \overline{EY}$ is median

$$EY = \frac{1}{2} DF = 6 \text{ cm}$$

$$EZ = \frac{2}{3} EY = \frac{2 \times 6}{3} = 4 \text{ cm} \quad (2)$$

$$\because m(\angle F) = 30^\circ$$

$$\therefore DE = \frac{1}{2} FD = 6 \text{ cm} \quad (3)$$

$$P. \text{ of } \triangle DEZ = 6 + 4 + 5 = 15 \text{ cm}$$